INTERSTATE COMMERCE COMMISSION REPORTS

VOLUME 345-I

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INTERSTATE COMMERCE COMMISSION
OF THE UNITED STATES

SEPTEMBER 1973–FEBRUARY 1976

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INTERSTATE COMMERCE COMMISSION REPORTS

EX PARTE NO. 270

INVESTIGATION OF RAILROAD FREIGHT RATE STRUCTURE

Decided September 28, 1973

Status of the proceeding discussed and nature of further investigations determined.

Appearances as shown in prior report, 340 I.C.C. 868, and in addition: *Leonard S. Goodman,* Special Projects Counsel to the Commission.

REPORT OF THE COORDINATOR

HARDIN, *Commissioner:*

The Commission, on July 13, 1973,[1] appointed this Commissioner Coordinator of this investigation into the "railroad freight rate structure."[2] The Commission took this extraordinary action because of the complexity and potential impact of this investigation and to expedite the decisional process.

The Coordinator is authorized to issue this status report. In addition, it is the Coordinator's responsibility to enter orders instituting subinvestigations, to issue initial reports setting forth tentative conclusions with respect to the subinvestigations thus instituted, and to rule upon any procedural requests relating to such matters, including those for oral hearing or further hearing.

The Coordinator's initial reports will, of course, be subject to exceptions, and the Commission, and not the Coordinator, will rule on the exceptions. The ultimate decisions in the subinvestigations will be made by the Commission, and the Coordinator will not participate therein.

This report, the first of a series of Coordinator reports, is intended as a status report to explain what has occurred since the issuance of the preliminary report, 340 I.C.C. 868, to indicate the direction the investigation will henceforth take, and to initiate immediately, by orders simultaneously issued herewith, investigations into certain aspects of the railroad freight rate structure. At later dates, additional orders instituting investigations into other facets of the rail freight rate structure will be entered by the Coordinator, spaced at intervals, so as not to overtax the resources of the Commission and the parties.[3]

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[1] The Commission, on July 13, 1973, also named this Commissioner Coordinator of Ex Parte No. 271, Net Investment—Railroad Rate Base & Rate of Return.

[2] Though stated in the singular, one of the matters to be resolved in this proceeding is whether or not there is or should be a single "railroad freight rate structure."

In the preliminary report and order, the 141 statements received in response to the order instituting this proceeding were considered, and a tentative course of action was outlined. Among other things, the Commission stated that a conference would be held between Commission staff members and representatives of carriers, industries, shippers, and others for the purpose of developing "criteria for evaluation of the rate structure, identifying data gaps, and establishing methods, surveys, et cetera, to supply necessary data." 340 I.C.C. at 882. The accompanying order required the filing of statements of intention to participate, and stated that a "conference" list would be made available. Also, suggestions regarding the kind of information to be required from the respondent carriers by means of a questionnaire which was being compiled by the staff "to elicit meaningful data," were invited. A conference list was prepared and served on all persons responding. Shortly after the issuance of the preliminary report, however, the Commission was successful in its efforts to obtain funds "earmarked for this particular proceeding." The Commission therefore determined that rather than proceed as indicated, its first priority was to obtain the services of a qualified special counsel and to initiate economic studies, matters subsequently to be discussed in more detail, and hence no conferences were held and no questionnaires were issued. In view of the elapsed time, no further purpose would be served at this juncture in issuing a questionnaire. However, conferences of the type initially suggested in the preliminary report held between our recently appointed Special Projects Counsel, a party to this proceeding, and other parties, whether they be carriers, shippers, consumer groups, or governmental officials, might, in the long run, prove to be most helpful. It is possible that as a result of conferences between the

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[3] While shippers of various commodities may believe that the Coordinator should immediately institute investigations into the aspects of the railroad freight rate structure of critical concern to them, they must remember that the resources in terms of money and manpower of the railroads, the Special Projects Counsel, and the Commission are not unlimited.

"parties" an agreed data bank of relevant information might be developed which could then be included in the record. Such conferences are strongly recommended.

While this proceeding is broad, to keep it within manageable proportions, it is necessary constantly to remain cognizant of the central purpose of this investigation. The principal focus of this proceeding, as set forth in the order instituting this investigation, is on (1) the possible self-defeating nature of general rate increases with respect to generating revenues, (2) any dispartities and distortions in rate relationships caused by general rate increases, (3) the uneven effects of general increases on individual railroads, and (4) the effect of general increases on railroad incentive to improve service in line with shipper requirements.

The ultimate objective of this proceeding is to take whatever corrective action may be shown to be necessary. Such corrective action may take many forms, examples would include requiring particular rates to be increased or decreased, taking into consideration findings arrived at in this investigation when considering individual rate proposals sponsored singly or jointly by the railroads at the suspension or investigation level, considering the findings in this proceeding as supplementing the record in future rail general increase cases, or recommending statutory changes.

The selective approach being adopted by the Coordinator as exemplified by the orders being issued simultaneously herewith, are not the only investigations instituted by the Commission concerned with the railroad freight rate structure. In addition to the related investigations, Ex Parte No. 270 (Sub-No. 1A), Export-Import Rates and Charges—Pacific Coast, Ex Parte No. 270 (Sub-No. 1B), Export-Import Rates and Charges—Great Lakes, Ex Parte No. 270 (Sub-No. 2), Investigation of Railroad Freight Service, the Commission has instituted the following investigations pertaining to issues the parties in this proceeding had suggested be included in this investigation.

1. Ex Parte No. 284, Investigation into the Need for Defining Reasonable Dispatch (Perishable Commodities), instituted March 13, 1972. Certainly, the degree of promptness and reliability in transporting commodities, in particular perishable traffic, has a relation to the railroad freight rate structure.

2. Ex Parte No. 285, Maintenance of Records Pertaining to Demurrage, Detention, and Other Related Accessorial Charges by Rail Common Carriers of Property, instituted July 24, 1972.

Charges for accessorial services set forth in the applicable tariffs are in many instances as important to carriers and shippers as the transportation rate. Hence, this proceeding was instituted "to assure the proper assessment and collection of all applicable demurrage, detention or other accessorial charges applicable to both rail freight cars and freight trailers."

3. Ex Parte No. 286, Adequate Notice and Furnishing of Data to the Public of Proposed General Increases in Freight Rates and Passenger Fares, instituted September 12, 1972. As stated in the opening paragraph of the order instituting this proceeding, representations submitted in Ex Parte No. 270 were responsible, in large measure, for the Commission's action:

> Among the responses received to the Commission's original order dated December 11, 1970, instituting the proceeding in Ex Parte No. 270, Investigation of Railroad Freight Rate Structure [preliminary report entered on November 5, 1971, not printed], were those suggesting broader and more effective notice to the public of the nature of and effective dates of proposed general increases in freight rates and charges.

4. Ex Parte No. 289, Remittance of Demurrage Charges by Common Carriers of Property by Rail, instituted October 12, 1972. This proceeding "initiated to examine and consider the need for requiring all common carriers of property by railroad subject to the jurisdiction of this Commission to remit to the railroad freight car owner all demurrage charges over and above $10 per car per day collected and retained by a railroad on foreign cars being detained on its lines," while not directly relating to the railroad freight rate structure, does place in issue one aspect of division of revenue among carriers discussed by a number of parties in their initial representations to the Commission in Ex Parte No. 270.

5. Ex Parte No. 290, Procedures Governing Rail Carrier General Increase Proceedings, instituted December 1, 1972. In initial representations submitted by a number of parties in Ex Parte No. 270, it was suggested that the Commission require that railroads seeking general increases submit evidence similar in type to that set forth in the appendix to the order instituting Ex Parte No. 290.

6. Ex Parte No. 293, Northeastern Railroad Investigation, instituted February 12, 1973. The relationship between weak and strong lines referred to in the Commission's preliminary report in Ex Parte No. 270 is of particular concern insofar as it relates to six major railroads serving the Northeast that are now in reorganization in Ex Parte No. 293.

7. Ex Parte No. 296, Procedures for Partial Recoupment of Increased Carrier Labor Costs, instituted June 15, 1973. Parties, primarily the railroad respondents, alluded to a need to streamline general increase proceedings in their initial representations in Ex Parte No. 270 and related proceedings. This matter is, as the title implies, under investigation in Ex Parte No. 296.

8. Ex Parte No. 297, Rate Bureau Investigation, instituted June 15, 1973. As the order instituting Ex Parte No. 297 recites, this investigation was prompted in part by representations of record in Ex Parte No. 270:

> In response to the orders of investigation in the pending Ex Parte No. 270, Investigation of Railroad Freight Rate Structure, and from other sources, inquiries and criticisms have been received by the Commission suggesting that the terms and structure of the agreements and the operation of various ratemaking organizations in implementing the agreements are not in furtherance of the national transportation policy as required by the act.

Further with respect to the issue of reduced rates for Government traffic, referred to by a number of parties in their initial representations and discussed in the prior report, 340 I.C.C. at pages 875-876, the Commission has once again sought amendment of section 22 of the Interstate Commerce Act. On July 10, 1973, the Commission submitted to the appropriate congressional committees a draft bill that would amend section 22 of the Interstate Commerce Act so as to eliminate free or reduced rates for Government traffic, except in time of war or other national emergency and except as to the transportation of commodities which are exempt from economic regulations under parts II or III of the act. The draft bill, identical to others submitted in previous years, has been introduced in the Senate as S. 2251.

The demands of this investigation, as stated in the preliminary report at page 884, were clearly beyond the available resources of the Commission:

> Recognizing the potential impact upon the Nation's welfare of these proceedings, and of the general public interest in the development of an adequate record, we have given serious consideration to the question of special counsel in this and the companion investigations. The major first hurdle confronting the Commission in deciding upon "special counsel" and supporting staff is the matter of adequate funding commensurate with the importance and complexity of the issues to be developed herein. An effort will be made forthwith through official channels to obtain the necessary funds as a supplemental appropriation earmarked for this particular proceeding. We also believe it essential to create a task force of Commission personnel, augmented to the extent possible by outside experts, to implement the decisional process, and we have begun to develop our internal staff as an initial step.

A further discussion of the budgetary restraints under which the Commission functions is to be found in a pamphlet, one of a series of summary statements on major problem areas, issued by the Commission and submitted to the Chairmen of the Committee on Commerce of the United States Senate and the Committee on Interstate and Foreign Commerce of the House of Representatives on March 17, 1971. The pamphlet, entitled Budgetary Support, contains the following chart:

Comparison of the increase of ICC regulated traffic to the average employment of the Commission

Year	Total revenue	Ton-miles	Average employment
	Millions	*Billions*	
1939	$5,650.3	403.8	2,567.0
1949	13,427.8	674.0	2,217.8
1959	19,507.1	877.6	2,268.1
1960	19,304.3	879.5	2,343.6
1961	19,200.0	875.4	2,386.1
1962	20,200.0	969.9	2,399.7
1963	20,795.9	1,017.9	2,412.8
1964	21,829.8	1,076.9	2,407.8
1965	23,349.8	1,172.3	2,399.1
1966	24,700.1	1,250.8	2,375.8
1967	24,871.9	1,248.8	[1]1,928.9
1968	26,504.3	1,310.3	1,899.0
1969	[2]28,284.9	[2]1,358.0	1,808.1
1970	[2]30,000.0	[2]1,381.0	1,801.9
1971	[3]31,800.0	[3]1,422.0	[3]1,733.0
1972	[3]33,000.0	[3]1,465.0	[3]1,662.0

[1] Excludes average employment (430) for those functions transferred to DOT (Department of Transportation).

[2] Preliminary.

[3] Estimated.

The text of the Budgetary Support pamphlet is, for convenience of the parties, set forth in appendix A.

In order to obtain funds needed to proceed, the Commission first sought the release of impounded funds. On January 3, 1972, it requested the release of $1,460,000 from fiscal year 1972 funds which had been placed in reserve by the Office of Management and Budget (OMB), specifically to fund this proceeding. OMB approved the request but determined that some of the reserve would be necessary to fund pay increases for the fiscal year. As a result, $700,000 was made available from the reserve for this proceeding and a supplemental appropriation request of $760,000 was submitted to Congress for the balance of the necessary funding.

The Commission appeared before the Senate and House appropriation subcommittees on April 5 and April 25, 1972, respectively, regarding the supplemental request for fiscal year 1972. However, Congress decided to defer the matter from 1972 to 1973. The $760,000 supplemental request thus became an amendment to the Commission's 1973 budget and was included in the fiscal year 1973 appropriation approved on August 22, 1972.

In its regular budget submission to OMB for fiscal year 1974, the Commission requested an additional $450,000 for economic studies for this proceeding. OMB approved this amount for inclusion in the President's budget for 1974. In reporting out the Commission's 1974 budget request, the House Appropriations Subcommittee reduced the amount to $200,000 and the House approved this amount. The Senate concurred in the House action.

It is to be noted that, with the exception of the 1974 fiscal year appropriation, all moneys specifically appropriated for this proceeding must, under the terms of the Commission's commitment to OMB and to Congress, be used to finance research conducted by noncommission personnel and the participation in this and related proceedings of a special outside counsel. Further, all moneys actually appropriated for this proceeding had been allocated prior to June 20, 1973, the date on which the now Coordinator assumed administrative responsibility for this proceeding. Upon assuming that responsibility, the Coordinator took immediate steps to conserve funds, and, if necessary to return any remaining funds to the Treasury in the event that the contracting for research or for the services of an outside special counsel proved to be impractical.

Having been successful in obtaining supplemental funds to finance, at least in part,[4] the cost of proceeding with this and related investigations, the Commission initiated a search for a special counsel. Unfortunately, considerable delay was experienced in obtaining the services of a qualified individual.[5] Ultimately, the Commission contracted with Leonard S. Goodman, Esq., to serve as

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[4] The Commission, from its regular appropriation remains obligated to assume the full cost of the administrative, clerical, and decisional aspects of this proceeding.

[5] The first individual who had been offered the position finally declined in early 1973, after a considerable lapse of time. Thereafter, on February 26, 1973, a preliminary letter contract was entered into, but it expired on May 31, 1973, when the individual was unable to agree to some of the provisions of a definitive contract.

Special Projects Counsel and to produce such evidence and pleadings as he deems appropriate, necessary, and practicable for the development of a full record in the public interest. His appointment was announced by an order making him a party to the proceeding, entered and served on June 28, 1973.

As the order of June 28, 1973 indicates, the designation of Mr. Goodman as Special Projects Counsel rather than Special Counsel represents something much more significant than a mere change in title. It shows an intent on the part of the Commission to convert the present operations of the Special Projects Counsel and such of his staff, as may be necessary, when and if funds become available,[6] from a contractual arrangement to an in-house Special Projects Unit or Section. This and related proceedings, as well as other proceedings of broad transportation significance, require the participation of an independent counsel assisted by his own staff to help in the development of adequate records in the furtherance of the public interest upon which the Commission may predicate its findings and conclusions. This aim can best be accomplished by having an in-house capability rather than, as circumstances here have demonstrated, commencing a prolonged search for outside special counsel each time the need arises.

Of course, it goes almost without saying that the Special Projects Unit or Section will be kept completely separate and distinct from the decisional process of the Commission. This will be accomplished in much the same way as the Commission has and will continue to treat the Special Projects Counsel in this proceeding. The Special Projects Counsel is a party to the proceeding, and although entitled to utilize the facilities and manpower capabilities of the Commission, as authorized by the Commission,[7] his rights and duties to the Commission are the same as any other party. In order to be assured that those staff personnel assisting the Special Projects Counsel in this proceeding are not inadvertently utilized by the Commission in its decisional function, a temporary unit of "special projects" has been organized within the Commission, to which personnel from its various offices and bureaus have been assigned to assist the Special Projects Counsel. Separate and totally distinct units have and will be established by the Commission to assist the

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[6] Dependent upon appropriations from Congress sufficient to cover the staffing of this unit or section. See appendix A.

[7] The Coordinator has authorized the appropriate offices of the Commission to reproduce and mail to the parties the Special Projects Counsel's pleadings and other documents.

Coordinator, and later the Commission, in rendering decisions in this and related proceedings.

The Special Projects Counsel has sought, and probably will continue to solicit, the cooperation of the parties to this proceeding. It is hoped that the parties will fully cooperate with the Special Projects Counsel in his endeavor to develop the record and further the public interest. Parties should not place obstacles in the path of the Special Projects Counsel. While the Special Projects Counsel is charged with the responsibility of furthering the public interest, each party to this proceeding also represents the public interest, albeit a particular segment of the public interest, and, hence all are linked to each other and to the Commission, which in the final analysis, must render a decision in the public interest. If all will act in a responsible and cooperative manner, this proceeding, which has such great potential for the public good, will be fruitful.

Believing it to be the function of the Coordinator to discuss fully all developments in this proceeding, the status of the economic studies conducted, under contract, for the Commission by a private research firm will next be considered.

In connection with the letting of contracts for research, a Request for Proposal (RFP) was issued by the Commission on April 28, 1972. The RFP set forth the areas of economic studies to be undertaken, and requested interested contractors to submit their approaches and qualifications for the research. After evaluation of the eight proposals received in response to the RFP, a contractor was selected, and a contract was signed on June 28, 1972. The contract has now been terminated.

Because of the unanticipated circumstances surrounding the Commission's search for a special counsel, it was believed, when the research contract was signed, that time would be saved by commencing the research studies immediately while continuing the quest for special counsel. During the extended interval between the execution of the research contract and the selection of a Special Projects Counsel, however, considerable material had been produced. The Special Projects Counsel[9] has now informed the Coordinator that having had an opportunity to examine the product submitted under the contract, he finds he is unable to use, as evidence, certain of the material produced.

Parties other than Special Projects Counsel will also be granted the right to inspect the research information produced by the contractor and submitted to the Commission. While some of the research performed under the contract will not be used as evidence in this proceeding, unless later introduced by a party and found to be relevant, material, and valid, it is of such nature as to have other uses, and may very well suggest areas in which additional research might be conducted by the parties, with a view toward introduction into evidence. Because of the nature of the material, consisting of a mass of statistical computations and limited explanatory text, it is impracticable for the Commission to reproduce the information or provide copies for inspection, other than at the Commission's Washington, D.C. office.[9] Release of the reports and the underlying data and information should not in any sense be construed to mean that the Commission has considered or adopted any part thereof. For the convenience of the parties, a summary of the research performed under the contract is attached to this report as appendix B.

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[9] The Special Projects Counsel, of course, had no opportunity to direct the areas of research activity nor to supervise the work product of the contractor.

Having reviewed the status and principal focus of this proceeding, there remains the question of the direction and nature of further investigations. The Commission initially indicated the general direction in the order of December 11, 1970, instituting this proceeding, and that direction was reaffirmed in its preliminary report, at page 881:

> In the order instituting this investigation we noted that "a number of parties have taken the position that the application of general increases, particularly when measured as percentages of existing rates, have over the years caused a misalignment of rate relationships and a distortion of proper rate levels." In that connection, we expressed the hope that a comparison of the results of rail burden studies for the years 1966 and 1969 would "present factual data helpful in identifying any shifts in the relative burdens imposed on particular traffic groups as a result of the general rate increases, to determine the nature of further investigations."

The 1966 burden study was attached as appendix B to the preliminary report, and the completed 1969 burden study is attached hereto as appendix C.[10] As to the traffic data for the 1969 study, both DOT and the Commission's staff uncovered deficiencies in the preliminary data and considerable effort was required to reprocess those data before the Rail Form A costing method could be applied to produce the study. Notwithstanding that effort, certain deficiencies still remain in the data, as observed in the introduction to the study, as follows:

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[9] Parties desiring to inspect this information should first inquire of the Secretary of the Commission, preferably by writing, requesting arrangements for such an inspection. This procedure is recommended so as to avoid the possible inconvenience of several parties attempting to inspect the information at the same time. If a need should subsequently develop, copies may be made available for public inspection at the Commission's regional offices.

[10] It is anticipated that DOT will soon complete an analysis of the 1972 waybill sample and that a burden study based on 1972 statistics will be prepared and released as soon thereafter as possible. While obviously this proceeding cannot be delayed until completion of this study, the 1972 burden study may be in a future Coordinator's report.

> In its analysis of the 1969 waybill tape, the Commission's Bureau of Economics discovered serious deficiencies in the data. The relatively poor quality of the data resulted primarily from errors in commodity coding (approximately a 6-percent error rate at the Standard Transportation Commodity Code 5-digit level), car identification, and multiple carload waybill handling. In addition to waybill processing deficiencies, inferior reporting by certain railroads, particularly in cases where poor tape records were submitted in lieu of waybills, also contributed to the poor data results. The quality of the waybill data was especially poor for the northeast and in respect to certain commodities or commodity groups, such as coal, iron ore and copper ore. Car identification for TOFC and refrigerator cars was inadequate. These deficiencies should be taken into account in interpretation of our study results.

While those deficiencies may cast some doubt on the accuracy of 1969 burden study results in certain respects, they are not of such a magnitude as to invalidate the entire burden study, or the comparison with the 1966 burden study. Furthermore, the 1966 and 1969 burden studies are based on the most reliable information available, and represent impartial efforts to reflect principally revenue-cost relationships on various commodities. It is recognized that the aggregate character of the burden studies may not produce the refined traffic, revenue, and cost data necessary for an exacting analysis of individual commodity movements. These studies, nevertheless, are of significant probative value and are useful tools for determining the direction of further investigations.

As stated in the preliminary report, this investigation exceeds in scope and complexity any hitherto undertaken by this Commission. A review of that report, wherein numerous issues are detailed and discussed, certainly supports that characterization. Equally important, however, has been the Commission's recognition that it would be impossible to institute investigations "simultaneously into all the rates and all the problems," 340 I.C.C. 881. Keeping in mind the genesis of this proceeding, initially it is intended to limit the many issues involved to those matters relating to the impact of general rate increases since Ex Parte No. 256, *Increased Freight Rates, 1967,* 329 I.C.C. 854, 332 I.C.C. 280, directly or indirectly, on specific commodities. The selection will be based on an analysis of burden studies, formal Commission reports, and other pertinent data or information.

It is recognized that among the principal focus of this proceeding, as hereinbefore set forth, is included the issue of the uneven effects of general rate increases on individual railroads. This, however, may not be of significant relevance with respect to the effect of such increases on individual commodities. The question of "uneven effects" appears to concern railroad systems individually, not groups of railroads or individual commodities. Accordingly, the Coordinator has determined to institute a subnumbered investigation solely with respect to the uneven effects of general increases on individual railroads. The institution of Ex Parte No. 270 (Sub-No. 3) Investigation of Railroad Freight Rate Structure—Uneven Effects of General Increases on Individual Railroads, should not be viewed as necessarily excluding the matter of "uneven effects" from other subnumbered investigations.

Each of the individual Coordinator orders, being served with this report, instituting subinvestigations contains a requirement that on a specified date interested parties shall notify the Commission of their intention to participate in the proceeding. The subinvestigations and the dates upon which the parties are to notify the Commission of their intention to participate are as follows:

Proceeding	*Due date for notification of intention to participate*
Ex Parte No. 270 (Sub-No. 3) Investigation of Railroad Freight Rate Structure—Uneven Effects of General Increases on Individual Railroads	November 1, 1973
Ex Parte No. 270 (Sub-No. 4) Investigation of Railroad Freight Rate Structure—Coal	October 30, 1973
Ex Parte No. 270 (Sub-No. 5) Investigation of Railroad Freight Rate Structure—Iron Ores	November 15, 1973
Ex Parte No. 270 (Sub-No. 6) Investigation of Railroad Freight Rate Structure—Scrap Iron and Steel	November 15, 1973
Ex Parte No. 270 (Sub-No. 7) Investigation of Railroad Freight Rate Structure—Lumber and Lumber Products	November 26, 1973

After the due date for filing notices of intention to participate by submitting evidence and argument has expired, the Commission will prepare and mail to the parties a service list. Following the circulation of the service list in the individual proceedings, it is the

Coordinator's present intention to hold informal conferences with the parties. Notices of the time and place of conferences will be mailed to the parties as soon after the preparation of the service lists as practical.

In connection with the entry of orders instituting subinvestigations it is well to recall that while the principal focus will be on (1) the possibly self-defeating nature of general rail freight rate increases, (2) the disparities and distortions in rate relationships which may have resulted from the recent series of general increases, and (3) the lack of railroad incentive to improve service in line with shipper requirements, it is also the duty of the Commission to accord due consideration to the requirements of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321-47 (1970). The appended order instituting an investigation into the railroad freight rate structure as it pertains to coal contains a negative threshold environmental assessment which obviates any need in that proceeding for issuing a detailed impact statement in accordance with the procedures prescribed in section 102(2)(c) of the NEPA. The bases for that assessment are set forth in appendix C to that order and borrow heavily from our past experiences in dealing with that same issue in general rate increase cases. As to the other subnumbered investigation instituted concurrently herewith, there appears to be available at this time insufficient facts and data to enable the Coordinator properly to assess and quantify the environmental consequences of the numerous alternatives that may be pursued in the investigation program envisioned in this proceeding as required by the NEPA. As a result, participants in all proceedings will be invited, in accordance with the further procedures established in the Sub-No. 4 investigation and to be established at a later date in the other investigations, to submit facts and comments regarding the probable environmental consequences that may result from any action to be taken therein, and such facts and comments will assist the Coordinator in assessing and defining any ecological issues that may be present. Should it be found necessary in any of these proceedings to follow the detailed environmental impact statement procedures prescribed in section 102(2)(c) of the NEPA, it is contemplated that such a statement will be prepared late enough in the development process to contain meaningful information, but early enough so that whatever information is contained in the statement can practically serve as input into the decisionmaking process (see *Scientists' Institute for Public Information, Inc.* v. *Atomic Energy Commission,* decided

June 12, 1973, No. 72-1331, United States Court of Appeals for the District of Columbia Circuit).

Appropriate orders will be entered.

APPENDIX A

Budgetary support

SYNOPSIS

While the subject is not one within the "criticism area," it clearly is one of our major concerns. To a great extent our operations are obviously limited by budget control.

The chart on the cover of this pamphlet tells a story unique in Government. It also shows a logical reason for some of the problems of the Commission.

•Although over the past 30 years, the surface transportation industry we are charged with regulating has more than quadrupled, our total personnel is actually less than it was in the 30's, and

•Although the industry increased by 50 percent in the decade of the 60's—and it will increase at least that much more in the 70's—our allowable personnel total has been reduced each year since 1963.

EXAMPLES OF EFFECT ON VITAL OPERATIONS

•Unquestionably the very greatest tool the Commission has in combatting the rail freight car shortage is our field force of car service people. They are all we have to range more than 22,000 railroad yards and stations, plus more thousands of shippers sidings, sea, gulf, and lake port rail car parking areas, etc. They must literally "herd along" slow moving cars, and enforce our car service orders (orders requiring cars to be moved to critical areas). Yet as the chart in our Freight Car Shortages pamphlet shows, though the average shortage of freight cars increased from 1,500 to over 10,000 a day during the 60's we had to reduce the number of car service people with which we were trying to cover the entire United States from 74 to 49.

•To the regular work of our field auditors the vast amount of responsibility for checking and auditing, due to the present problem of conglomerate activity, has been added. Yet we now have only 50 field auditors trying to do the total auditing job on around 5,000 transportation companies which come within our regulatory responsibility throughout the United States.

•A high percentage of consumer, shipper and carrier complaints can usually be handled in the field—yet in 1964 we had to reduce our regional offices throughout the country from 13 to 7. We now have only 6.

The very nature of the responsibilities of this Commission does not include "projects," which could be cut out, reduced, or postponed to effect budget reductions. We can only reduce by eliminating people, and the necessary equipment they use or operate. Ninety-three percent of our funds are expended in salaries and benefits for our personnel. We have truly passed the point where budget priorities, as such, can be assigned without further serious reductions of services rendered or required.

Until the mid 30's the only mode the Commission regulated was the railroads. Now, we also have the trucking industry, the bus industry, the inland water carrier industry, the freight forwarder industry, interstate maritime shipping (*e.g.*, between New York and Oregon), and certain pipelines.

OUTLOOK

President Nixon in his 1970 Transportation Week message summed up the future of the transportation industry very well when he said:

"Today, the field of transportation accounts for approximately 20 percent of the Nation's gross national product and employs more than ten million persons. Yet we know, as we enter a new decade, the growth of our transportation system is just beginning. The growth must be carefully planned and intelligently directed—both our economic prosperity and our military security will depend on it. And, so will the quality of life in our country."

Forecasts call for rapid growth of transportation facilities in the next ten years. To keep pace it is imperative that the Commission be given the necessary resources to do the job.

THE QUESTION

Is it realistic to expect the Commission to perform at the level of standards at which the public, the Congress, the Administration, and the Commission would like to see today's surface transportation problems regulated, with a staff considerably smaller than we had in the 1930's?

APPENDIX B

Summary of research performed under contract

Cost analysis study.—The Commission stated in the Preliminary Report at page 876:

"At this point we would like to refer to our decision in *Rules to Govern Assembling & Presenting Cost Evidence*, 337 ICC 298 (1970), and take note of the work of the task force which has been created composed of members of the Commission's staff. They have been considering the feasibility and practicability of additional research projects into specific areas of cost ascertainment. Virtually all the parties to that proceeding agreed that additional research in the area of transportation costing was necessary for the development of more accurate information for utilization by the carriers in setting rates, and the Commission and others in judging the reasonableness of such rates. Seeing no need to explore the matters considered at length in that proceeding, we will not duplicate herein the difficult work of the cost task force."

Nonetheless, in discussions with the Office of Management and Budget, the release of FY 1972 funds was made contingent upon the Commission's agreement to include in its research activity some effort to effectuate improvement in the Commission's cost finding procedures. It was readily apparent that the time and funds available to proceed with the investigation would be insufficient to do more than attempt to address the more vocal and persistent criticisms of current cost finding procedures in the Commission.

The cost finding research work undertaken by the contractor was responsive to a desire to bring about some improvement in or cope with the criticism of the Commission's cost finding procedures. Costs were needed obviously to estimate revenue/cost relationships for comparison among the various classifications of traffic movements.

The contractor was initially assigned the tasks of examining and evaluating the current ICC cost formula and to develop a methodology that would refine the Commission procedures for estimating costs which could be used in the overall freight rate structure investigation. The contractor was expected to conduct this research within the framework of the present ICC Uniform System of Accounts.

Essentially the main thrust of the initial phase of the cost analysis was directed toward inquiring into the basis for apportioning operating expenses in accounts prescribed in the ICC's uniform system of accounts.

The Rail Form A cost formula is the most widely used and accepted procedure for estimating railway costs. It was developed by the ICC and first used in Docket No. 28300, *Class Rate Investigation, 1939,* 262 I.C.C. 447, and subsequent reports in the proceeding (264 I.C.C. 41, 268 ICC 577, 281 ICC 213, and 286 I.C.C. 5). Since its development, the Rail Form A cost finding formula has undergone numerous minor revisions which tried to assign expenses to services on the basis of what *causes* the expenses, rather than according to how expenses are classified for accounting purposes.

The ICC apportions cost on the basis that over a relatively long span of time, railroad operating expenses are approximately 80 percent variable with traffic.[1] For example, a 10-percent change in the level of traffic will result in an 8-percent change in operating expenses. The use of this 80-percent variable cost rule has been severely criticized on the grounds that (1) the percentage variable is a function of the amount of traffic and is *not* constant irrespective of the traffic level, and (2) expense accounts differ in the degree of variability of costs and that is, therefore, improper to apply this rule to expense accounts which differ markedly in their cost variability. Other criticisms attendant to the application of Rail Form A are directed at the statistical methods used in estimating the allocation factors between the service units (yard switching, train switching, running train expenses, etc.), and that the method focuses on developing average costs rather than marginal cost.

The initial study proceeded in two phases. In this first phase, alternative costing procedures were investigated and evaluated and a new methodology for estimating short run railway operating expenses was developed. The study was conducted over a 5-month period and the results were documented in RMC Report UR-215, "Analysis of the Railway Operating Costs for Class I Line-Haul Railroads," dated April 4, 1973.

The research effort was conducted through a series of structured analytic steps to develop a statistical model with the desired capability to better explain how railway operating expenses react to changes in traffic. Basically, the model which was developed to derive the percent variable factor, or to estimate changes in the operating expenses generated by changes in service demand, consisted of a set of "regression" equations. The equations were designed to reflect as accurately as possible the relationship between the individual expense account or a grouping of accounts and the various measures of size, railroad characteristics and traffic output variables.

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[1] For more recent "variability studies" by the Commission's Section of Cost and Valuation, see *Rail Carload Cost Scales by Territories for the Year 1970,* statement No. 1C1-70.

As a result of considerable testing and evaluation, the operating and maintenance accounts were aggregated into 37 cost categories for the statistical cost analysis research. The criteria for grouping accounts give consideration to combining those accounts which are related to common transportation outputs or activities or are in some way related to each other.

In the second step measures or "variables" were selected to explain the effects of the size of the carrier, special railroad characteristics, and traffic service outputs, including the weight and volume of freight shipped and distance traveled. These potential "explanatory" variables included service units and charactertics of the carriers that have a logical relationship to the costs being estimated and could be considered as "cost generators." The selected "variables" together with the expense category groupings provide the basic structure for applying statistical techniques and methods to develop the costing model's equation and to compute marginal unit costs.

The two basic components of the model—expense account categories and the identified operational characteristics giving rise to these costs—were used to derive the percent variability or, stated otherwise, to estimate changes in the rate of operating expense caused by changes in the operating characteristics.

By these procedures, short run marginal costs are easily derived since marginal costs become equal to the percent variable times the total amount of expenses of the account category divided by the number of units used to measure the respective output.

The costs were based on 1970 data and, therefore, derived from a single year's data. The unit costs computed in this phase of the study were for a given level of expenses and the operations and interpreted as the additional costs associated with a unit change in the operating characteristics.

This short run cost analysis study was not intended to complete the cost research required for the rate structure investigation. The results of the short run cost analysis would have to be integrated with a study of capital costs to develop the total costs which are needed in a complete analysis of the rate structure.

A considerable amount of research effort was used in the initial phase in identifying suitable data, probing and inquiring into the alternative procedures and methods to be analyzed and the testing of various hypotheses. As an exploratory effort, it appeared to have enough merit to warrant further testing. Accordingly, the contractor was directed to an evaluation of the model in order to refine and/or correct the variability factors; rerun the refined cost equations using 1970 railroad cost data; compare the cost model with the ICC Rail Form A costing procedure and demonstrate how the equations developed can be used in costing out rail freight shipments. The study was a shorter effort than the initial phase, lasting only 2 months. The results of the completed tasks are described in RMC Report UR-218, "Short-Run Cost Analysis of Class I Line-Haul Railroads—Phase II: Revisions and Comparisons to Rail Form A Cost," dated July 30, 1973.

In responding to the assigned tasks, the effort essentially followed the research strategy adopted in initial study with refinements and/or changes made to components of the regression equation needed to strengthen the costing model. A number of changes were made in the initial cost estimating equations and short run marginal costs. The expense account groupings represent an effort to refine the categories used in the initial phase. The regrouping of several cost categories and combining certain small accounts with other cost categories were based on a reassessment of the characteristics of the individual account to insure that the groupings had a greater degree of homogeneity.

In addition a number of new variables (measures of operating characteristics associated with the cost categories) were included in an attempt to improve the statistical reliability and structural basis of the cost equation. Through accepted statistical tests, all of the "explanatory" variables found to be statistically insignificant were eliminated.

Another major change in the cost effort was the development of short run marginal costs by individual railroads for each cost category. Previously, only average marginal costs were computed for the United States regression equations and regional average costs for the analysis by regions. Furthermore, the regional cost estimates were shown to be unstable in some cases and less useful for costing purposes. Marginal costs were computed for each individual railroad using the United States regression equation results.

The sample of class I railroads included in the data basis was reexamined in light of the model's capability of handling extreme data values. Certain roads were deleted due to data deficiencies or because of atypical operations. Additional roads were deleted as necessary in selected equations because of particular data deficiencies or, in the case of the yard cost equation, roads not providing yard switching services.

The results of the regression analysis undertaken for the 31 categories (restructured from the 37 categories defined in the initial study) of operating and maintenance costs for 1970 and 1971 were compared. From the results of the two sets of data, it can be observed that the cost estimated for maintenance of way and structures tend to fluctuate considerably between the years. A tentative conclusion drawn from the unstable results may be that the span of time for which each measurement was made (i.e., 1 year) was not sufficient to capture the true cost/output relationship. Possibly a more stable result for these cost categories may be derived across several years' data. The marginal cost estimates indicate that pooling several years' data would seem appropriate. In the case of traffic expenses and all transportation costs, the difference may reflect the current inflation rate and it can be postulated that short run marginal costs for these cost categories can be correctly developed from a single year's data.

As stated previously, a primary objective of this phase of the cost analysis was to compare the marginal cost estimates computed using the contractor's equations with the Rail Form A costs. This effort was considered essential not only for making an assessment of the costing procedure developed but for demonstrating how the marginal cost estimates would be used for costing commodity movements.

For the comparison study, the ICC staff prepared two separate Rail Form A runs with the 1970 data—one using 80-percent variability ratios and the other with adjusted variability ratios which were developed in a special study conducted by the ICC Cost Finding Section.

The report noted that time did not permit an extensive evaluation of the results presented. However, the Rail Form A and the contractor's costs appear to be in line. In some cases the Rail Form A costs could not be easily separated by the same service unit as was done with the contractor's study costs and no comparison was made. The effect of the variability factor, the validity of which remains to be tested, is quite noticeable in the results and has a strong impact on the different sets of unit costs.

The information thus assembled under the cost analysis study, basic research which because of manpower limitations could not be conducted by the Commission staff, will now be turned over to the Commission's Section of Cost and Valuation for study. Depending upon the results of this in-house evaluation of the research performed under contract, the public may be invited in this or a separately instituted proceeding to express their views. In the interim primary reliance will continue to be placed on the Rail Form A cost formula.

Rate structure analysis study.—The contract research on the railroad rate structure sought to provide a statistical specification of (a) intercommodity and intracommodity rate relationships prior to the spate of general increases since 1966 (b) disparities and distortions in these relationships induced by application of the general increases. Rates actually used as contained in the Commission's 1966 and 1969 carload waybill sample, the latest available, were employed as the primary data base.

Generally, where a competitive balance between shippers might be disturbed by a change in the relationships between rates charged each shipper, these relationships gain significance and weight is given to them in resolving rate disputes. With this view of what underlies the concept of intra- and intercommodity rate relationships, the objective of the research was to use statistical analysis of sample waybills to the extent possible in approximating specific rate relationships based on market competition.

The dependability of statistical analysis so directed rests on the extent to which rate traffic management expertise can be brought to bear in identifying commodities that are treated the same for ratemaking purposes, i.e., that are in effect looked upon as essentially the same commodity in setting rates. Such a grouping would seek to minimize the biases of combining high and low rated commodities or commodities with different relationships to tonnage and mileage. Such biases could, in applying the regression technique, obscure significant rate structure differences and changes and diminish the value of the analysis in probing the pattern, nature, and extent of rate discrimination as between shippers, commodities, and regions.

There is, however, a great need for a manageable body of information to reveal how authorized general increases are, in fact, applied by the railroads across the various territories and the many commodity groups and which would help the Commission evaluate proposed uniform or selective general increase requests. In order to fulfill this need some degree of refinement must be foregone in delineating, for example, the sets of origin and destination points for any given commodity that can be identified as sharing the same distinct rate structure. The waybill sample itself is limited since it was designed to develop traffic characteristics primarily in terms of territorial movements and "statistical" as distinguished from "tariff" descriptions of commodities. The rate structure disputes in general increase cases, however, deal in large part with relationships between commodities groupings, between movements from particular States or from entire territories to other States or other territories, or between "short haul" versus "long haul" movements of the same commodity.

For purposes of the Ex Parte No. 270 investigation, however, a description of the rate structure carried only as far as the kind of study set forth above is incomplete and care should be used in drawing conclusions. It is true that delving into each commodity group to determine the grouping of origin and destination points peculiar to that commodity would be unfeasible unless it were done only for a select group of commodities. But it is as important for this to be done with the major commodities as it is to develop at least a modicum of information for a broad spectrum of commodities. In-depth studies of even a few of the major commodities—though they might not be done again for some time—could bring to the surface significant patterns of rate discrimination which could be missed or blurred with a study according a broad range of commodity groups the same treatment. This point is stressed in order to put the intended product of the contract research rate structure study in the right perspective; only a pilot study of the in-depth approach was accomplished under the contract research.

The contract research study initially set out to obtain estimates of revenues per service unit, keeping various shipment characteristics constant (such as loading and length of haul) for comparison across commodities and across territorial origin-destination pairs. In addition to these standardized revenues per service unit, average measures of the mileage taper and of the proportional change with shipment tonnage would be obtained for each commodity and regional flow—for both 1966 and 1969—in order to identify significant changes associated with the application of general increases between the 2 years. The initial effort was not completed and it was found necessary to revise the research procedures, benefiting from lessons learned respecting the need to incorporate rate-traffic considerations if the analysis were to avoid aggregation biases that stand in the way of satisfactory identification and description of significant rate relationships.

In the initial effort, 62 groups of commodities covering all traffic were formed—primarily on the basis of feasibility. Regional flows were defined on the basis of origin and destination areas corresponding to the first digit of the Standard Point Location Code which provides an eight region breakdown.

The statistical technique of regression analysis was employed to measure the mileage taper, the proportional change with shipment weight, and other characteristics. For purposes of applying this technique, some general mathematical type of relationship had to be postulated (the contractor postulated a logarithmic relationship) and the various characteristics that might affect rates had to be specified. The technique then determined the numerical terms that result in the closest approximation of the relationship actually exhibited by the waybill revenues with respect to service units and the various characteristics affecting rates. Rates are, of course, not actually related to mileage and tonnage in a precise smooth manner that can be simply expressed in an algebraic equation. For example, at small mileage ranges (25-50 miles, e.g.), movements may take the same rate; or there will be different point-to-point rates at various ranges of mileages and tonnage within a territorial flow; or rates on movements within a territorial flow may come from a variety of tariffs some of which account for a preponderant portion of the traffic and not all of which, if any, may have been constructed on the same formula with respect to mileage scale and relationship between minimum weights. As a result the relationship to mileage obtained through regression analysis would, in effect, be an average over the applicable rates, weighed by the amount of traffic involved. Generally, the relationship postulated was one between revenue per car and the following set of service units or characteristics presumed to affect revenue per car:

Tons per car
Short-line miles
Number of cars in shipment and designators for
Multiple car shipment (to a large extent representing
unit train shipment)
Nine car type codes
Month of shipment (or quarter of year)
Rate type codes: import, export, waterborne (ex-lake, lake cargo,
intercoastal, or coastwise) and other mode (part of shipment
by nonrail mode).

The contractor's report on this phase of the study provides an analysis of results for only four commodity groups: fresh vegetables, lumber, iron ore, and metal scrap. For each of these, the 1966 and 1969 rate structures are analyzed through comparisons, for different regional flows, of standardized revenue per ton-mile, mileage tapers, and proportional changes with shipment weight variations. The analysis involved tests of whether the observed differences between regional flows were statistically significant.

The original study plan contemplated statistical testing of the regression results but this initial study was suspended before this task could be performed.

The conclusions drawn in the contractor's report relate to the analysis of the foregoing four commodity groups:

(a) The generally good fit of the regression analysis to the data is said to indicate orderliness of rates—systematic relationships of rates to service units. The results for lumber, fresh vegetables, and metal scrap were adduced.

(b) No significant 1966-69 rate level changes were noted for most regional flows of lumber, vegetables, and metal scrap; significant rate reductions were noted for two regional flows of iron ore and for lumber, Pacific to Great Lakes region. In many cases significant changes were noted in the mileage tapers and proportional changes with shipment weight, shedding doubt on the neutrality of the application of general increases. But the results as to 1966-69 changes, particularly as they related to changes in standarized revenue per ton-mile, were probably invalid. An error in the computer processing of the regressions for 1969 produced downward biases in the 1969 rate level estimates. In addition, the standardized revenue per ton-mile estimates were probably subject to biases due to the particular groupings of commodities and from problems in specifications as to standard car type, month or quarter, etc., assumed in the computations.

(c) For metal scrap, no substantial variations in standarized revenue per ton-mile among the regional flows were found. For the other three commodities treated, specific movements stood out: for lumber, rates on shipments from the Pacific region appear uniformly higher,[2] for vegetables, Mountain region rates are higher than from other origins; for iron ore there were substantial regional disparities. Again, one should be wary of the defects in the computation of standardized revenue per ton-mile. The arbitrary specifications as to the standard shipment characteristics for some commodities may have resulted in unstable estimates.

(d) The contractor, stating that Rail Form A formula costs increase at a greater rate with mileage than with tonnage, viewed a rate structure with a similar pattern as reflecting cost relatedness. On these grounds, fresh vegetables appear cost related while lumber and iron ore appeared not to be for the most part, but rather to reflect value of service pricing.

The initial effort fell short of expectations largely because of biases resulting from origin-destination and commodity groupings that did not adequately reflect rate-traffic management considerations. The new effort began with a study to group seven digit STCC commodity classes that ordinarily take the same rate between the same set of points for the same loading car.[3] A sufficient number of groups was to be formed to account for 75 percent or more of rail traffic.

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[2] In this discussion, "rates" being compared are after correction for tonnage and mileage differences.

[3] Differences in rates between commodity classes within group, if any, were to be fairly random from one origin-destination pair to another. Systematically higher or lower rated commodities were not expected to be included with the rest. Rate-traffic management expertise with which the contractor supplemented the staff assigned to the project was relied upon primarily to follow these guidelines in the grouping.

The contractor reviewed every seven digit STCC code appearing in the waybill sample for grouping along the lines set forth above. This laborious process was repeated a number of times reflecting on information gained from other sources. This information, which had been expected to bear on appropriate commodity aggregation, consisted of (1) Census of Transportation distribution of traffic by mode, (2) value per pound, (3) density ("stowage factors"), (4) a survey of the general increase cases for intercommodity comparisons, and (5) revenue to cost ratios from a 1966 burden study—all obtained for commodities defined at the five digit STCC level.

The grouping and the foregoing supportive material were then revised after Commission staff review of traffic coverage, adequacy of information sources, etc. In particular, the contractor modified the design of the statistical analysis to permit measurement of rate level differences for commodities within the groupings which Commission staff found to have been authorized different general increase treatment. The commodity groupings finally numbered 217.

In addition further narrative description of various elements of the rate structure was provided for as many commodities as could be practicably covered. Some 40 descriptions, though fairly brief, were to serve as sources for interpretations of what is being measured by the regression analyses.

The contractor also produced an extensive report abstracting and cross-referencing Commission decisions relating to specific commodities in general increase cases from 1967 to 1972. Various computer runs were produced during the course of the project organizing the waybill sample data in ways that would serve in formulating the commodity groupings, developing the plan for regression analysis, and analyzing the regression results. Besides counts of waybills falling into various categories (commodity groupings, categories of traffic—e.g., intrastate, export-import, etc.) statistics such as average revenue per 100 pounds and per ton-mile and average and range for percent of first class rate were computed for each commodity and territorial flow.

In applying regression analysis this time, a more complex logarithmic relationship was postulated than the one used under the initial effort. The simpler logartithmic relationship implies that the percentage change in cents per cwt. associated with a 1 percent change in mileage is the same at all mileages and all tonnages, and likewise, that the percentage change associated with a 1 percent change in tonnage is the same at all mileages and tonnages. The new formula provides for capturing the effect of differences in the mileage tapers at different loadings and differences in the rate relationship between successive tonnage levels at different lengths of haul.

In addition to measuring the relationship of cents per 100 pounds[4] to tonnage and mileage, the regression technique was applied so as to measure the influence of other factors which affect the rates charges—depending on the commodity. This was done by postulating that rates subject to these factors were uniformly some percentage (the regression technique would quantify it) above or below rates not subject to those factors. The explanatory factors are as follows:

(a) Whether the shipment in question moved in more than one car (including unit train shipments).

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[4] An error affecting some of the tonnage figures and hence the estimated tonnage relationship was found in the data used by the contractor for number of carloads per waybill for many of the multiple car shipment movements. The degree to which the error affects the results is not shown.

(b) Whether the shipment moved in interline as opposed to local service.[5]

(c) Whether the shipment moved in a tank car or a "special car."

(d) Whether the shipment moved in open cars (gondola and open hopper) or nonbulk cars (box, refrigerator, and flatcars).[6]

(e) The bias, if any, introduced by including Penn Central waybills where rate type was not identified.[7]

(f) Whether the specific commodity in question received different treatment in general increase cases from other commodities grouped with it for purposes of the regression analysis. Subcommodity group differences of this sort were estimated for 15 of the 217 groups, including grain products, lumber, fertilizers, and iron and steel products.

Separate regression analyses (by commodity group and origin-destination group based on the five rate territories) were run for the following categories of traffic, based on the premise that the rate structures for each were essentially different:

ordinary intrastate (the average rate level difference for each State within a territory was determined)
ordinary interstate
TOFC ordinary
Import
export
Lake (lake cargo or ex-lake)
intercoastal
coastwise

Regression results for each data set are presented both in technical, statistical terms and in terms of estimated cents per hundredweight at different mileage and loadings per car, showing intervals within which there is a 90-percent chance that actual rates with the corresponding mileages and loadings would fall as well as the number of sample waybills in each of the mileage and tonnage brackets.

For each waybill sample observation used in the regression analyses, the difference ("residual") between the actual rate from the waybill record and the estimated rate obtained by substituting the same miles, tons, and other shipment specifications into the corresponding regression equation was computed and printed together with other information from the waybill record—all organized, with each territorial flow and commodity group, by State-to-State movement. This allows for study of significant rate changes and rate level differences under the territorial flow level.

Comparison tables were obtained to summarize information from the large mass of regression results. Part 1 of this computer printout presents on the same page cents per hundredweight for different commodities in the same "economic group" (of which there are 16, comparable to the 2-digit STCC level) for both 1966 and 1969 and percentage change between the 2 years, keeping tons and miles at the same average level for the 2 years. These averages and percentage changes are computed in different ways—for example, at the average tons and miles for the corresponding economic group as well as for the rate group in question. In addition, a statistical test was made to determine whether the mileage and tonnage relationships changed between the 2 years, apart from any change in the general rate level for the territorial flow and commodity in question. Part 2 organizes the same information differently, showing the various territorial flows under each commodity group.

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[5] Only for the following commodities was this distinction considered significant and tested: agricultural limestone, fluxing stone, nonagricultural limestone, road aggregates, pulpwood chips, and agricultural limestone (ground).

[6] The distinction was assumed significant and was tested only for industrial sand, salt, cement and clinkers, lime, agricultural limestone (ground), and clay (crushed, ground, or pulverized).

[7] Penn Central failed to furnish the rate type in submitted 1969 data.

A list of authorized increases by commodity was also drawn up from the master tariff and supplements for Ex Parte Nos. 256 and 259, but it has been found to contain error.

A pilot study was conducted to explore approaches for in-depth treatment of the rate structure for major commodities and to determine the feasibility of this kind of treatment. The commodity group chosen for this purpose was paper and allied products.[8] Considerable emphasis is placed on the nature, pattern, and time trend of industry production and location, with extensive tabular presentations. The discussion traces through the production stages of paper products from the gathering of pulpwood at pulp mills. Estimates are derived of total U.S. movement by all modes of transportation for each of the product categories, employing as basic sources the Census of Manufactures, the Census of Transportation, and various academic and Government/industry studies. From various shipment characteristics (commodity value, length of haul, density, etc.), the susceptibility of each product category to rail movement is inferred. Inter- and intraterritorial rail movements for each product are compared with regional production to develop a geographic breakdown of the rail market share in both 1966 and 1969. Discussion of the results of the statistical rate structure analysis is limited to the comparison summary tables for the commodities covered by the study (the same comparison summaries done for all 217 commodities).

Among the pertinent facts brought out in the pilot study are the following:

a. There was a notable loss in rail market share in the case of paperboard boxes and containers, most of the loss occurring in short-haul markets where the competition is primarily with private motor carriage.

b. Movements of woodpulp, newsprint, and special industrial paper are dominantly by rail; standardized rate levels are relatively high. The pattern of these results does not support a simple version of value of commodity ratemaking.

c. Pulpwood, the basic raw material of the industry, moves by rail, motor, and water short distances to pulp mills; statistical results bear out the notion that pulpwood rates have traditionally been held low with the understanding that the manufactured products produced therefrom would move by rail. From 1966 to 1969 authorized increases were apparently applied in full.

d. Despite diminishing timber supplies in the Northeast over a long period of time and the dependence of that area on inflows of raw materials from other areas, the industry in that area remains viable (though static) through concentration on high grade paper products and through an orientation toward converting operations.

Conclusions were not drawn from the results of the regression analysis of all commodity groups. The contract research was terminated before certain steps specified in the study work plan for this purpose were undertaken. These tasks include (a) a long-haul short-haul tier of comparisons, (b) tests for significantly different rate levels within the commodity-territorial distribution flow level, based on the regression residuals, (c) comparison of specific sets of movements and commodities (drawn from general increase cases and elsewhere) related through market competition, (d) comparisons of estimated 1969 rate levels with estimates of levels fully authorized under Ex Parte Nos. 256 and 259, and (e) overview analysis and interpretation of results for purposes largely of addressing issues raised in the Preliminary Report.

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[8] The pilot study deals with the following individual commodities: pulpwood, woodpulp, groundwood, paperboard, newsprint, printing paper, fiber wallboard. wrapping paper, sanitary paper, paperboard boxes and containers, and waste paper.

There are limitations in drawing conclusions from the study results with respect to issues involved in this proceeding concerning rate relationships founded on preservation of competitive balance between shippers of the same commodity or related commodities. Investigation of these relationships may require a level of detail not available in the waybill sample and suggest that little may be gained from regression analysis as it had to be applied to cover 217 commodities. However, inasmuch as such relationships between large groups of movements (i.e., defined on basis of county group, State, or territory) of these 217 commodities are significant to general increase cases, the regression approach seems useful.

Caution should be exercised in drawing conclusions from rate relationships in regard to rate discrimination without considering costs. Some consideration is given to cost in holding certain shipment characteristics constant in estimating rate relationships (territory, car type, tonnage), but not enough.

A list of the reports associated with this rate structure research follows:

Analysis of Rail Rate Structures, Report UR-202, December 15, 1972 (narrative report, 1 volume)

Appendix A-66: *Geographical Distribution of Taffic and Revenue from the Carload Waybill Statistics, 1966*

Appendix A-69: *Geographical Distribution of Traffic and Revenue from the Carload Waybill Statistics, 1969*

Appendix B-66: The 1966 Rate Structure (regression results), 4 volumes

Appendix B-69: *The 1969 Rate Structure* (regression results), 4 volumes

The Structure of Railroad Freight Rates:

Working Paper 1, *Review of General Increase Proceedings*, July 1973, revised August 8, 1973

Working Paper 2, *Commodity Rate Groups*, July 1973, revised August 1, 1973

Working Paper 3, *The 1966/69 Waybill File*, August 10, 1973

Working Paper 4, *Rates Structure Data Processing*, August 10, 1973

Working Paper 5, *The Territorial Distribution Reports*, August 10, 1973

Working Paper 6, *Group A Pilot Study, Paper Industry and Paper-Related Commodities*, August 10, 1973

Working Paper 7, *The Interpretation of the Rate Structures*, August 1973

Computer Print-Outs (August 1973):
—Cross Commodity Rate Structure Comparisons
—Cross Origin/Destination Rate Structure Comparisons
—Analytic Reports[a] (regression results), 4 volumes
—Descriptive Reports (regression results), 4 volumes
1966 Territorial Distribution Reports, August 1973
1969 Territorial Distribution Reports, August 1973

In addition, there are eight volumes of computer print outs of the Regression Residuals which are, in effect, individual waybill records. These are not being made public except upon individual requests for access and approval by the Vice Chairman.

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[a] Intrastate Official Teritory analytic and descriptive reports are contained in a separate volume.

APPENDIX C

INTERSTATE COMMERCE COMMISSION

Bureau of Accounts

RAIL REVENUE CONTRIBUTION

by Commodity and Territory

for the Year 1969

Statement No. 1S3-69

Washington, D.C.
October 1973

This study, issued as information, has not been adopted by the Interstate Commerce Commission.

PREFACE

This 1969 rail revenue contribution study is the second such study prepared in response to the Commission's order in Ex Parte No. 270, *Investigation of Railroad Freight Rate Structure*. The first such study covered the year 1966 and was released in October 1971 as Statement No. 1S3-71.

Generally, the results of this study may properly be compared with the results of the 1966 study to measure shifts among commodities in their relative contribution to the transportation burden. Standard transportation commodity code changes occurring between 1966 and 1969 which may affect comparisons of certain commodity groups are described in the section of the text titled "Standard Transportation Commodity Code Changes."

Comparison of the results of this study with the results of any study prior to 1966 would be improper for two reasons. Studies prior to 1966 were priced out at the out-of-pocket and fully distributed cost levels whereas the 1966 and 1969 studies use the variable and fully allocated cost levels as prescribed by the Commission in Docket No. 34013, *Rules to Govern Assembling & Presenting Cost Evidence*. Secondly, the 1966 and 1969 studies are dissimilar due to the Commission's adoption, effective January 1, 1964, of a new commodity classification.

John A. Grady,
Director

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INTRODUCTION

The distribution of the rail revenue contribution by commodity groups for the year 1969 was constructed using the same methods and procedures employed in the 1966 study and previously. Some modifications have been made in the development of costs. For example, the Commission's decision in Docket No. 34013, *Rules to Govern Assembling & Presenting Cost Evidence*, 337 I.C.C. 298, contains findings with respect to cost levels and the elements to be included therein which differ from those employed in studies prior to 1966. This study applies unit costs for the year 1969 to the service units incurred in handling the traffic covered by the Department of Transportation 1 percent waybill sample for that year.[1] The resultant aggregate costs will then compare with the revenue of each commodity to determine the revenue contribution.

The 1969 waybill data on tape was subjected to extensive analysis by the Bureau of Economics that was formerly charged with the function of handling waybill material at the Commission. In its analysis of the 1969 waybill tape, the Bureau of Economics discovered certain deficiencies in the data. The relatively poor quality of the data resulted primarily from errors in commodity coding (approximately a 6-percent error rate at the Standard Transportation Commodity Code five-digit level), car identification, and multiple carload waybill handling. In addition to waybill processing deficiencies, inferior reporting by certain railroads, particularly in cases where poor tape records were submitted in lieu of waybills, also contributed to the poor data results. The quality of the waybill data was especially poor for the Northeast and in respect to certain commodities or commodity groups, such as coal, iron ore and copper ore. Car identification for TOFC and refrigerator cars was inadequate. These deficiencies should be taken into account in interpretation of our study results.

The term "revenue contribution," as used in this study refers to the amount by which carload revenues resulting from the rate structure in effect during the year 1969 exceed or fail to meet the variable costs. Revenue contribution is a function of costs, rates, and volume, and reflects not only cost factors but also the influence of demand for transportation, a value-of-service factor which is independent of direct cost.

COST LEVELS

Aggregate costs are shown at only the variable cost level. Revenue to cost relationships however are shown at both the variable and fully allocated cost levels.

Variable costs represent those expenses which, over the long-term period, fluctuate with the volume of traffic handled. The variable costs are computed at 80 percent of the freight operating expenses, rents, and taxes. They also include an allowance for the cost of equity capital invested in transportation property plus interest on borrowed capital invested in transportation property. This allowance for the cost of equity capital plus interest on borrowed capital is applied to 50 percent of the road property and 100 percent of the equipment used in freight service. No provision is made in either level of costs for Federal income taxes.

Constant costs represent the remaining body of operating expenses, rents, taxes (other than Federal income taxes), and allowance for the cost of equity capital and interest on borrowed capital which are not included in the variable costs. Unlike studies of the rail revenue contribution prior to 1966 the constant costs do not contain the deficits caused by passenger train service and less-than-carload service. The total constant costs were assigned to the various commodities on a pro rata ton and ton-mile basis regardless of kind of class.

The fully allocated costs in this study refer to the sum of the variable costs and the statistical ton and ton-mile apportionment of constant costs computed as described above.

UNIT COSTS

The unit costs used in this study were prepared by the Section of Cost and Valuation of the Bureau of Accounts by the application of the rail cost formula, Rail Form

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[1] See Department of Transportation Statement TD-1 (Second Edition), Carload Waybill Statistics 1969, Territorial distribution, traffic and revenue by commodity classes.

A,[2] to the annual freight operating expenses, rents, and taxes, and service units of the class I railroads for the year 1969. These unit costs have been published as Statement No. 1C1-69, *Rail Carload Cost Scales by Territories for the year 1969.*

The variable costs reflect the average switching conditions and average train operations of the territories in which the traffic moved, the average weight of load, the average length of haul, the type of equipment, and the empty-return movement of the equipment. It is believed that recognition of these transportation characteristics in the application of the costs is sufficiently representative of the costs incurred by the carriers for transporting the major portion of the commodity classes. Since only the territorial movements as a whole are under consideration, a special operating practice that would concern only a portion of a movement would not be as representative of the costs as are the territorial average conditions reflected in these costs.

Certain classes of commodities have individual characteristics which vary from the territorial average conditions reflected by this procedure. Specific recognition of such differences has been made by adjustments in the variable unit costs of the following commodities: iron ore (101), copper ore (102), bituminous coal and lignite (112), petroleum coke (29113), coke (33113), and railroad equipment (374) moving on its own wheels.

These adjustments are due mainly to movement in larger than normal size trains (way and through trains with a greater than territorial average gross ton weight of cars and contents, excluding cabooses), and a smaller than average amount of terminal switching service, and result in reductions in a portion of the costs in region III, official territory, and region VII, western district. These reductions necessitated an offsetting increase in the costs applicable to the remaining traffic. A discussion of the adjustment of unit costs for specific commodities is contained in the ensuing paragraphs.

Commodity class 101, iron ores

In the western district the costs of handling iron ore were adjusted to reflect the cost and operating characteristics of two railroads in that district whose iron ore traffic was 88 percent of the total tons carried by them during the year 1969. Three components of terminal cost were adjusted to reflect the characteristics of these two roads, i.e.: Group IV, Carload switching expenses at origin and destination; Group VIII, Carload station clerical expenses; and Group XI, Train supplies and expenses. The line-haul costs were adjusted to reflect the train weights and length of haul in way trains of these two roads, and to reflect a 100 percent empty return of freight train cars.

The cost of movement of iron ore in the Official territory was adjusted to reflect the lower terminal cost for Group IV, Carload switching expenses at origin and destination; Group VIII, Carload station clerical expenses; and Group XI, train supplies and expenses based on ratios previously developed. The line-haul costs were adjusted to reflect the heavier than average train weight for iron ore in the official territory for way and through trains based on verified statement 177 in Ex Parte No. 256, *Increased Freight Rates, 1967,* 332 I.C.C. 280.

Commodity class 112, bituminous coal and lignite

The cost of switching bituminous coal at origin and destination in official territory and western district was based on the relationship of switching minutes per equated car handling of four large coal hauling railroads in the official territory to the regional average. The adjustments in terminal costs for clerical costs and train supplies and expenses in the official territory and western district, i.e., Group VIII expenses and Group XI expenses, were based on the relationship of the two iron ore roads to the regional average in the western district because it is reasonable to assume that the similarity of these two bulk commodities, iron ore and bituminous coal, result in similar handling costs.

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[2] Rail Form A has been published by the Bureau of Accounts as Statement No. 9-66.

The line-haul costs in the official territory were adjusted to reflect the train weights of way and through trains based on two large coal hauling roads in the official territory. This adjustment had the effect of increasing the average train weights for way and through trains because coal traffic is handled in trains that are heavier (gross tons of cars and contents excluding cabooses) than the usual way and through trains in the official territory. This resulted in a decrease in the line-haul unit costs. No adjustment was made in the line-haul costs in the western district.

Commodity classes 29113 petroleum coke and 33113 coke

The terminal unit costs for coke include the same switching adjustment in official territory as bituminous coal. No other adjustments were made in the costs for coke.

Railroad equipment moving on its own wheels

For movement of railroad equipment on its own wheels at lawful tariff rates, the unit costs were determined separately because this commodity incurs different services from the usual traffic.

The terminal expenses incurred in moving this traffice are: Group IV, Terminal switching of the revenue movement; Group VII, Station clerical, and Group XI, Train supplies and expenses and special services. Those omitted as not applicable are the Group IV, Switching for spotting and pulling empty cars and the Group VI, Freight train car expenses, road train to industries (origin plus destination).

In the line-haul unit costs, there is no provision in the cost per car-mile for tare weight of the car as the weight of the car is treated as lading and costed out using costs per ton-mile. The line-haul car costs omit freight train car ownership costs and the expense of any empty return.

Commodity class 102 copper ore

Copper ore moving from the mine to the smelter is thought to be a special type of movement and to differ from the average of other traffic in the western district. In 1961 computation of the cost of transporting copper ore was done in detail to reflect differences in switching costs, station clerical costs, cost of special services and weight of train. For expediency, relationships in the 1961 study were applied to the 1969 costs to produce the specific costs applied to copper ore. In addition, the line-haul costs were computed with a 100 percent empty return of cars and were not increased for circuity.

COMPUTATION OF AGGREGATE COSTS

The variable cost of handling any particular traffic was determined by multiplying the service units developed in the carload waybill study by the appropriate unit costs and totalling the results. The unit costs were applied by type of car and by territorial movement.

The terminal unit costs used for interterritorial movements, i.e., official to south, south to official, official to west, west to official, south to west, and west to south, were based on one terminal handling in the origin territory and one terminal handling in the destination territory. The cost was obtained by taking one-half of the terminal unit cost in the originating territory and one-half of the terminal unit cost in the terminating territory and applying the resultant unit cost to the tons and carloads of traffic in the interterritorial movement involved.

In a similar manner, the line-haul unit cost was obtained by applying one-half the line-haul unit cost in the originating territory for way and through trains, respectively, and one-half the line-haul unit cost in the terminating territory for way and through trains, respectively, to the respective car-miles and ton-miles in the interterritorial movement, as applicable. This, in effect, is the same as applying the originating territorial line-haul cost to one-half the distance the traffic moves, respectively, in way and through trains and terminating territorial line-haul costs to the remaining distances the traffic moves, respectively, in way and through trains.

The aggregate constant costs for each territorial movement were computed by applying the appropriate constant unit costs to the tons and ton-miles of each commodity class. For each commodity the constant costs were added to the variable costs to obtain the fully allocated cost for each commodity on a territorial movement basis.

RESULTS

The breakdown of the 1969 totals by commodities and by territorial movements within each commodity is set forth in the table. The most significant information is the revenue cost relationships in columns (10) and (11) which are shown separately for the individual classes and for the commodity groups by territorial movements. Column (10) shows the ratio of revenue to variable cost whereas column (11) indicates the ratio of revenue to fully allocated cost. This table also shows, by commodity classes and by territorial movements, the average load (in tons), the average haul (in short-line miles), the revenue, the variable cost, and the contribution to the transportation burden. Therein is reflected the relative share of the burden contributed by each commodity class for the United States as a whole and separately for each territorial movement. Items in the column of contribution marked "DEF" indicate the deficit contribution, i.e., the amount by which the revenue from a given commodity movement failed to cover the variable costs.

STANDARD TRANSPORTATION COMMODITY CODE CHANGES

Although the results of this study may generally be compared with the results of the 1966 study, certain standard transportation code changes occurring between 1966 and 1969 make some comparisons difficult. Care should be exercised in comparing the following commodities.

20391—Mixed loads of canned and preserved fruits
20990—Miscellaneous food preparations

Many of the commodities shown as a part of commodity 20391, Mixed loads of canned and preserved fruits in 1966 appear as a part of 20990, Miscellaneous food preparations, in 1969.

26215—Fine paper including thin and book paper, noncoated.
26213—Printing paper coated or noncoated.

Commodity 26215, Fine paper including thin and book paper, noncoated, which appeared in the 1966 study, was eliminated from the STCC classification. Most of the former STCC 26215 commodities appear as a part of commodity 26213, printing paper coated or noncoated, in 1969.

28139—Industrial gases NEC

28198—Anhydrous ammonia

Commodity 28139, industrial gases NEC appears in both the 1966 and 1969 studies. Commodity 28198, anhydrous ammonia, which is shown separately in the 1969 study, was included as a part of commodity 28139 in 1966.

28711—Fertilizer

28712—Superphosphate

28713—Ammoniating fertilizer solution

28714—Miscellaneous fertilizer compounds

28799—Miscellaneous agricultural chemicals

Commodity 28711, fertilizer, which appeared in the 1966 study, was eliminated from the STCC classification. The former STCC 28711 commodities appear in the 1969 study as commodity 28714, miscellaneous fertilizer solution; and as a part of commodities 28712 superphosphate, 28713 ammoniating fertilizer solution, and 28799 miscellaneous agrigultural chemicals.

33113—Coke screening and breeze

29113—Petroleum coke

Commodity 33113, coke screening and breeze appears in both the 1966 studies. Commodity 29113, petroleum coke, which is shown separately in 1969, appeared as a part of commodity 33113 in 1966.

32753—Gypsum building materials except lath and plaster

32754—Gypsum wallboard

Commodity 32753, gypsum building materials except lath and plaster, appears in both the 1966 and 1969 studies. Commodities 32754, gypsum wallboard, which is shown separately for 1969, appeared as a part of commodity 32753, gypsum building materials, in 1966.

37121—Passenger car bodies and body parts (1966)

37121—Passenger motor car bodies (1969)

37141—Motor vehicle parts except gear frames

37147—Motor vehicle body parts

Commodity 37121, passenger car bodies and body parts, which appeared in the 1966 study, was changed to passenger car bodies by the elimination of body parts from this commodity class. Commodity 37121 appears in the 1969 study as passenger car bodies and does not include body parts. The body parts, which were a part of commodity 37121 in 1966, appear as part of commodity 37147, motor vehicle body parts in the 1969 study. Commodity 37141, motor vehicle parts except gear frames, which appeared in the 1966 study, is shown as a part of commodity 37147, motor vehicle body parts in the 1969 study.

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCATED COST (11)
00000	TOTAL, CARLOAD TRAFFIC									
	US TO US	266,791	14,348,034	53.8	393	93,238,478	75,695,922	17,542,556	123.2	102.9
	OFF TO OFF	93,823	5,382,584	57.4	253	24,864,906	21,229,200	3,635,706	117.1	97.7
	SOU TO SOU	46,208	2,519,410	54.5	187	7,396,236	6,724,268	671,968	110.0	93.0
	WST TO WST	82,915	4,626,163	55.8	405	29,174,746	23,662,465	5,512,281	123.3	101.8
	OFF TO SOU	9,623	464,506	48.3	545	4,621,805	3,353,518	1,268,287	137.8	110.7
	SOU TO OFF	9,726	465,968	47.9	679	4,871,736	3,761,450	1,110,286	129.5	108.1
	OFF TO WST	7,412	213,733	28.8	1,507	7,329,853	5,128,271	2,201,582	142.9	124.2
	WST TO OFF	9,723	365,971	37.6	1,744	9,147,136	7,822,358	1,324,778	116.9	97.9
	SOU TO WST	3,534	135,840	38.4	1,109	2,607,156	1,819,210	787,946	143.3	121.4
	WST TO SOU	3,827	173,879	45.4	1,278	3,224,846	2,195,182	1,029,664	146.9	120.4
01100	FIELD CROPS									
	US TO US	16,801	999,441	59.5	360	5,627,556	4,382,647	1,244,909	128.4	104.7
	OFF TO OFF	2,322	144,587	62.3	250	707,322	585,118	122,204	120.9	101.1
	SOU TO SOU	1,277	59,603	46.7	267	228,836	194,953	33,883	117.4	98.4
	WST TO WST	11,839	723,573	61.1	347	3,918,476	2,917,837	1,000,639	134.3	108.5
	OFF TO SOU	589	46,674	79.2	532	191,477	220,658	29,181DEF	86.8	69.0
	SOU TO OFF	58	1,691	29.2	1,009	26,267	31,190	4,923DEF	84.2	75.0
	OFF TO WST	21	1,025	48.8	843	13,930	10,171	3,759	137.0	112.8
	WST TO OFF	323	11,039	34.2	1,591	264,069	230,011	34,058	114.8	97.0
	SOU TO WST	18	362	20.1	1,894	8,268	7,288	980	113.4	94.5
	WST TO SOU	366	10,892	29.8	1,536	268,911	185,421	83,490	145.0	121.5
01121	COTTON IN BALES									
	US TO US	937	23,868	25.5	744	350,805	242,508	108,297	144.7	124.1
	SOU TO SOU	358	9,032	25.2	300	72,779	49,329	23,450	147.5	131.0
	WST TO WST	293	6,712	22.9	474	73,955	58,283	15,672	126.9	112.3
	WST TO SOU	278	7,888	28.4	1,497	198,423	129,822	68,601	152.8	127.8
01132	CORN, EXCEPT POPCORN									
	US TO US	3,373	240,225	71.2	369	1,078,395	945,668	132,727	114.0	90.9
	OFF TO OFF	1,135	75,565	66.6	302	363,995	313,438	50,557	116.1	95.1
	SOU TO SOU	275	23,320	84.8	336	62,215	63,783	1,568DEF	97.5	76.2
	WST TO WST	1,515	101,900	67.3	350	473,705	381,719	91,986	124.1	98.6
	OFF TO SOU	405	37,115	91.6	547	147,440	165,863	18,423DEF	88.9	66.4
	OFF TO WST	15	870	58.0	843	8,705	5,611	3,094	155.1	123.3
	WST TO OFF	25	1,205	48.2	866	16,816	12,796	4,020	131.4	107.3
	WST TO SOU	5	250	50.0	1,286	5,525	2,464	3,061	224.2	174.7
01136	SORGHUM GRAINS									
	US TO US	794	61,879	77.9	331	351,747	280,770	70,977	125.3	98.2
	WST TO WST	786	61,402	78.1	330	348,747	277,076	71,671	125.9	98.4
01137	WHEAT, EXCEPT BUCKWHEAT									
	US TO US	4,080	299,795	73.5	397	1,969,830	1,149,049	820,781	171.4	133.9
	OFF TO OFF	370	24,735	66.9	160	128,635	78,350	50,285	164.2	138.9
	SOU TO SOU	25	1,720	68.8	305	6,280	4,729	1,551	132.8	105.8
	WST TO WST	3,640	270,350	74.3	414	1,805,845	1,041,269	764,576	173.4	134.6
	OFF TO SOU	10	790	79.0	309	2,150	3,522	1,372DEF	61.0	47.7
	WST TO OFF	35	2,200	62.9	995	26,920	21,179	5,741	127.1	101.1
01144	SOYBEANS									
	US TO US	1,552	98,456	63.4	176	342,719	287,077	55,642	119.4	100.1
	OFF TO OFF	439	27,441	62.5	103	90,366	80,699	9,667	112.0	97.4
	SOU TO SOU	221	14,573	65.9	199	43,671	32,589	11,082	134.0	109.6
	WST TO WST	799	49,550	62.0	169	180,167	143,716	36,451	125.4	104.9
	OFF TO SOU	85	6,421	75.5	468	26,121	28,076	1,955DEF	93.0	73.5
	WST TO SOU	5	327	65.4	560	1,972	1,569	403	125.7	98.7
01195	POTATOES, OTHER THAN SWEET									
	US TO US	996	25,982	26.1	1,280	330,758	313,953	16,805	105.3	89.6
	OFF TO OFF	145	4,193	28.9	660	60,270	51,198	9,072	117.7	102.9
	SOU TO SOU	7	178	25.4	679	1,730	2,526	796DEF	68.5	52.5
	WST TO WST	534	13,639	25.5	1,093	234,812	231,590	3,222	101.4	88.1
	SOU TO OFF	43	1,143	26.6	1,090	18,551	25,093	6,542DEF	73.9	60.5
	WST TO OFF	205	5,309	25.9	2,089	169,034	160,364	8,670	105.4	90.5
	WST TO SOU	55	1,389	25.3	2,149	43,048	39,158	3,890	109.9	94.7

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCATED COST (11)
01197	SUGAR BEETS									
	US TO US	2,768	137,609	49.7	119	244,743	430,935	186,192DEF	56.8	49.6
	OFF TO OFF	43	2,801	65.1	335	9,118	12,031	2,913DEF	75.8	61.8
	WST TO WST	2,725	134,808	49.5	114	235,627	418,904	183,277DEF	56.2	49.2
01200	FRESH FRUITS AND TREE NUTS									
	US TO US	969	22,778	23.5	1,762	668,660	786,902	118,242DEF	85.0	70.1
	OFF TO OFF	103	3,011	29.2	297	25,892	28,919	3,027DEF	89.5	81.9
	SOU TO SOU	27	669	24.8	541	9,045	8,930	115	101.3	93.4
	WST TO WST	148	4,643	31.4	1,304	120,920	113,508	7,412	106.5	93.6
	SOU TO OFF	195	3,886	19.9	1,057	77,865	106,834	28,969DEF	72.9	67.2
	WST TO OFF	448	9,357	20.9	2,820	411,211	500,922	89,711DEF	82.1	73.3
	WST TO SOU	24	474	19.8	2,849	21,329	25,011	3,682DEF	85.3	76.7
01300	FRESH VEGETABLES									
	US TO US	1,419	37,345	26.3	1,941	1,133,835	1,253,388	119,553DEF	90.5	80.0
	OFF TO OFF	67	2,538	37.9	403	20,598	18,873	1,725	109.1	93.3
	SOU TO SOU	13	284	21.8	683	4,410	5,081	671DEF	86.8	80.6
	WST TO WST	311	9,739	31.3	1,330	213,329	215,222	1,893DEF	99.1	87.0
	SOU TO OFF	199	3,866	19.4	1,139	91,186	114,740	23,554DEF	79.5	73.3
	OFF TO WST	6	389	64.8	1,251	8,679	4,874	3,805	178.1	142.2
	WST TO OFF	760	18,084	23.8	2,867	725,979	819,195	93,216DEF	88.6	78.1
	WST TO SOU	71	1,833	25.8	2,385	65,782	71,272	5,490DEF	92.3	82.0
01400	LIVESTOCK AND LIVESTOCK PRODUCTS									
	US TO US	594	10,235	17.2	1,020	233,482	233,380	102	100.0	90.8
	OFF TO OFF	93	2,068	22.2	719	34,490	35,706	1,216DEF	96.6	87.5
	SOU TO SOU	5	202	40.4	165	1,607	562	1,045	285.9	247.6
	WST TO WST	464	7,228	15.6	1,026	171,885	178,186	6,301DEF	96.5	88.3
	WST TO OFF	13	344	26.5	1,796	9,806	8,817	989	111.2	95.3
	WST TO SOU	14	370	26.4	2,248	14,514	9,335	5,179	155.5	130.8
01900	MISCELLANEOUS FARM PRODUCTS									
	US TO US	92	3,613	39.3	555	33,582	30,492	3,090	110.1	94.4
	OFF TO OFF	19	577	30.4	423	5,438	5,439	1DEF	100.0	88.7
	SOU TO SOU	8	351	43.9	369	2,111	1,683	428	125.4	107.0
	WST TO WST	52	2,268	43.6	649	16,060	15,724	336	102.1	87.2
	WST TO OFF	6	160	26.7	1,709	5,305	3,974	1,331	133.5	114.6
08600	GUMS AND BARKS, CRUDE *									
	US TO US	152	5,730	37.7	698	96,389	56,654	39,735	170.1	144.7
	OFF TO OFF	71	2,470	34.8	408	35,633	21,189	14,444	168.2	148.0
	SOU TO SOU	23	571	24.8	332	9,449	4,430	5,019	213.3	185.8
	WST TO WST	19	741	39.0	1,318	15,341	10,349	4,992	148.2	121.3
	OFF TO SOU	14	639	45.6	863	11,617	6,229	5,388	186.5	160.3
	OFF TO WST	6	231	38.5	921	5,585	2,830	2,755	197.3	180.1
	WST TO OFF	7	322	46.0	2,252	9,567	7,164	2,403	133.5	107.6
10100	IRON ORES *									
	US TO US	20,350	1,550,600	76.2	237	3,549,700	3,525,796	23,904	100.7	76.8
	OFF TO OFF	4,750	368,550	77.6	189	848,450	931,608	83,158DEF	91.1	72.9
	SOU TO SOU	500	41,000	82.0	170	74,100	71,568	2,532	103.5	82.9
	WST TO WST	14,450	1,089,350	75.4	256	2,465,550	2,395,681	69,869	102.9	77.8
	OFF TO SOU	600	47,450	79.1	267	137,550	103,436	34,114	133.0	101.7
	WST TO OFF	50	4,250	85.0	688	24,050	23,503	547	102.3	78.0
10112	BENEFICIATING GRADE ORE, CRUDE									
	US TO US	2,200	169,400	77.0	58	119,050	131,700	12,650DEF	90.4	68.5
	SOU TO SOU	250	23,900	95.6	114	31,950	30,630	1,320	104.3	82.9
	WST TO WST	1,950	145,500	74.6	48	107,100	121,078	13,978DEF	88.5	65.1
10200	COPPER ORES *									
	US TO US	267	22,712	85.1	295	80,605	67,617	12,988	119.2	92.9
	WST TO WST	265	22,599	85.3	292	79,209	66,775	12,434	118.6	92.5

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(%) OF REV. TO VARIABLE COST (10)	RATIO(%) OF REV. TO FULLY ALLOCATED COST (11)
10211	CRUDE COPPER ORES									
	US TO US	42	3,671	87.4	94	5,614	6,877	1,263DEF	81.6	67.4
	WST TO WST	42	3,671	87.4	94	5,614	6,877	1,263DEF	81.6	67.4
10212	COPPER CONCENTRATES AND PRECIPITATES									
	US TO US	225	19,041	84.6	334	75,191	60,940	14,251	123.4	95.7
	WST TO WST	223	18,928	84.9	330	73,595	59,898	13,697	122.9	95.2
10300	LEAD AND ZINC ORES									
	US TO US	346	25,285	73.1	380	123,555	96,304	27,251	128.3	101.0
	OFF TO OFF	27	1,657	61.4	567	11,441	10,527	914	108.7	87.4
	WST TO WST	292	21,227	72.7	330	93,093	73,586	19,507	126.5	100.0
	SOU TO OFF	14	1,394	99.6	488	8,905	5,227	3,678	170.4	128.9
	OFF TO WST	5	305	61.0	571	2,410	1,718	692	140.3	110.8
	SOU TO WST	6	579	96.5	1,202	6,193	4,089	2,104	151.5	110.6
10500	BAUXITE AND OTHER ALUMINUM ORES *									
	US TO US	786	67,914	86.4	685	399,002	351,855	47,147	113.4	88.1
	OFF TO OFF	45	9,380	208.4	263	30,228	18,238	11,990	165.7	116.4
	SOU TO SOU	133	11,907	89.5	382	43,886	34,730	9,156	126.4	97.8
	WST TO WST	246	19,760	80.3	936	141,672	134,258	7,414	105.5	76.8
	SOU TO OFF	52	4,887	94.0	1,095	31,614	37,270	5,656DEF	84.8	63.5
	WST TO OFF	38	3,219	84.7	1,016	32,525	35,464	2,939DEF	91.7	72.3
	SOU TO WST	170	12,873	75.7	559	81,423	56,697	24,726	143.6	111.2
	WST TO SOU	79	5,199	65.8	889	36,676	34,526	2,150	106.2	83.2
10600	MANGANESE ORES *									
	US TO US	109	7,648	70.2	376	43,641	33,058	10,583	132.0	106.0
	OFF TO OFF	80	5,816	72.7	309	29,536	22,757	6,779	129.8	105.2
	SOU TO SOU	13	764	58.8	313	3,761	2,361	1,400	159.3	129.4
	WST TO WST	8	572	71.5	746	5,920	3,703	2,217	159.9	124.8
	SOU TO OFF	5	355	71.0	627	2,302	2,022	280	113.8	90.1
10900	MISCELLANEOUS METAL ORES *									
	US TO US	199	15,943	80.1	327	101,194	75,857	25,337	133.4	104.0
	OFF TO OFF	50	4,117	82.3	728	31,733	25,335	6,398	125.3	95.9
	SOU TO SOU	20	1,795	89.8	666	12,972	8,017	4,955	161.8	123.2
	WST TO WST	93	7,335	78.9	154	15,372	17,236	1,864DEF	89.2	72.8
	SOU TO OFF	21	1,624	77.3	890	12,451	12,007	444	103.7	80.9
	WST TO OFF	11	843	76.6	1,016	25,220	10,962	14,258	230.1	176.8
11100	ANTHRACITE COAL *									
	US TO US	960	63,242	65.9	183	166,039	206,168	40,129DEF	80.5	67.9
	OFF TO OFF	894	59,101	66.1	139	137,915	175,443	37,528DEF	78.6	67.0
	WST TO WST	26	1,591	61.2	106	3,178	3,920	742DEF	81.1	69.2
	OFF TO SOU	30	1,955	65.2	865	14,255	14,435	180DEF	98.8	78.0
	OFF TO WST	10	595	59.5	2,332	10,691	12,370	1,679DEF	86.4	67.4
11112	CLEANED OR PREPARED ANTHRA. (CRSHD, SCRND OR SIZED)									
	US TO US	634	40,918	64.5	205	158,082	162,582	4,500DEF	97.2	81.1
	OFF TO OFF	568	36,777	64.7	203	129,958	131,857	1,899DEF	98.6	83.2
	WST TO WST	26	1,591	61.2	106	3,178	3,920	742DEF	81.1	69.2
	OFF TO SOU	30	1,955	65.2	865	14,255	14,435	180DEF	98.8	78.0
	OFF TO WST	10	595	59.5	2,332	10,691	12,370	1,679DEF	86.4	67.4
11200	BITUMINOUS COAL AND LIGNITE									
	US TO US	53,641	3,703,353	69.0	250	10,155,419	8,089,939	2,065,480	125.5	94.2
	OFF TO OFF	30,751	2,399,633	78.0	230	6,533,952	4,747,282	1,786,670	137.6	99.0
	SOU TO SOU	15,700	763,700	48.6	213	1,853,500	1,999,323	145,823DEF	92.7	77.3
	WST TO WST	2,989	236,249	78.6	186	500,498	423,481	77,017	118.2	89.0
	OFF TO SOU	1,750	135,550	77.5	570	537,850	373,837	164,013	143.9	107.7
	SOU TO OFF	2,350	164,600	70.0	421	710,800	529,382	181,418	134.3	101.4
	OFF TO WST	100	5,800	58.0	281	17,950	15,803	2,147	113.6	87.2
13100	CRUDE PETROLEUM AND NATURAL GAS									
	US TO US	115	5,025	43.7	331	22,168	26,924	4,756DEF	82.3	70.7
	SOU TO SOU	45	2,050	45.6	182	5,575	6,624	1,049DEF	84.2	73.5
	WST TO WST	69	2,901	42.0	425	16,028	19,675	3,647DEF	81.5	69.8

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCATED COST (11)
14100	DIMENSION STONE, QUARRY **									
	US TO US	76	4,299	56.6	360	20,347	17,762	2,585	114.6	94.1
	OFF TO OFF	16	892	55.8	146	3,030	3,188	158DEF	95.0	83.1
	SOU TO SOU	16	1,009	63.1	163	2,684	1,895	789	141.6	118.8
	WST TO WST	30	1,791	59.7	350	7,146	7,526	380DEF	95.0	77.3
	SOU TO OFF	9	425	47.2	834	4,781	3,660	1,121	130.6	107.1
14200	CRUSHED AND BROKEN STONE, INCLUDING RIPRAP *									
	US TO US	8,306	603,660	72.7	140	1,136,029	1,384,333	248,304DEF	82.1	68.4
	OFF TO OFF	3,055	225,221	73.7	112	445,945	569,718	123,773DEF	78.3	66.3
	SOU TO SOU	2,534	175,601	69.3	116	234,433	291,867	57,434DEF	80.3	66.8
	WST TO WST	2,568	190,863	74.3	157	398,795	464,149	65,354DEF	85.9	70.3
	OFF TO SOU	97	7,917	81.6	619	25,673	38,547	12,874DEF	66.6	51.3
	SOU TO OFF	60	2,820	47.0	908	22,030	17,992	4,038	122.4	102.6
	OFF TO WST	5	200	40.0	1,095	3,420	2,389	1,031	143.2	116.9
	WST TO OFF	5	390	78.0	326	3,060	1,398	1,662	218.9	174.2
	SOU TO WST	41	2,033	49.6	817	18,104	14,503	3,601	124.8	99.3
	WST TO SOU	15	843	56.2	838	6,549	5,792	757	113.1	88.8
14212	FLUXING STONE, INCLUDING FLUXING LIMESTONE									
	US TO US	1,321	104,375	79.0	179	252,394	275,713	23,319DEF	91.5	73.2
	OFF TO OFF	998	75,521	75.7	139	190,952	200,303	9,351DEF	95.3	79.8
	SOU TO SOU	76	5,924	77.9	77	10,544	7,628	2,916	138.2	116.7
	WST TO WST	163	15,469	94.9	176	28,610	33,082	4,472DEF	86.5	68.2
	OFF TO SOU	87	7,467	85.8	610	22,288	34,720	12,432DEF	64.2	49.1
14219	CRUSHED AND BROKEN STONE, NEC, INCLUDING RIPRAP									
	US TO US	6,310	446,205	70.7	130	775,770	984,330	208,560DEF	78.8	63.8
	OFF TO OFF	1,585	114,490	72.2	83	171,290	273,308	102,018DEF	62.7	53.6
	SOU TO SOU	2,380	164,858	69.3	114	212,685	272,679	59,994DEF	78.0	64.9
	WST TO WST	2,219	160,360	72.3	153	336,995	394,168	57,173DEF	85.5	70.2
	OFF TO SOU	10	450	45.0	768	3,385	3,827	442DEF	88.5	73.0
	SOU TO OFF	60	2,820	47.0	908	22,030	17,992	4,038	122.4	102.6
	OFF TO WST	5	200	40.0	1,095	3,420	2,389	1,031	143.2	116.9
	WST TO OFF	5	390	78.0	326	3,060	1,398	1,662	218.9	174.2
	SOU TO WST	40	1,975	49.4	831	17,915	14,286	3,629	125.4	99.7
	WST TO SOU	10	470	47.0	1,106	4,970	4,283	687	116.0	91.6
14411	SAND (AGGREGATE AND BALLAST)									
	US TO US	3,026	229,595	75.9	100	322,238	429,222	106,984DEF	75.1	62.7
	OFF TO OFF	492	35,175	71.5	72	40,117	81,041	40,924DEF	49.5	42.8
	SOU TO SOU	1,198	87,420	73.0	111	117,202	134,913	17,711DEF	86.9	71.7
	WST TO WST	1,238	100,704	81.3	88	139,957	190,063	50,106DEF	73.6	61.2
	SOU TO OFF	25	1,271	50.8	765	13,131	9,737	3,394	134.9	109.3
	SOU TO WST	68	4,378	64.4	175	9,444	10,802	1,358DEF	87.4	72.4
14412	GRAVEL (AGGREGATE AND BALLAST)									
	US TO US	2,990	216,728	72.5	90	310,415	436,247	125,832DEF	71.2	60.0
	OFF TO OFF	571	39,238	68.7	75	53,843	94,310	40,467DEF	57.1	49.5
	SOU TO SOU	730	49,030	67.2	138	73,517	90,552	17,035DEF	81.2	67.3
	WST TO WST	1,544	118,302	76.6	67	144,483	215,858	71,375DEF	66.9	56.4
	SOU TO OFF	70	6,114	87.3	563	29,193	24,680	4,513	118.3	96.8
	SOU TO WST	73	6,461	88.5	113	7,242	9,655	2,413DEF	75.0	63.8
14413	INDUSTRIAL SAND AND GRAVEL									
	US TO US	1,882	136,810	72.7	244	501,496	459,777	41,719	109.1	89.3
	OFF TO OFF	1,270	93,693	73.8	204	332,343	310,702	21,641	107.0	88.7
	SOU TO SOU	178	12,584	70.7	211	31,565	27,648	3,917	114.2	92.3
	WST TO WST	363	26,101	71.9	328	107,625	93,917	13,708	114.6	91.6
	OFF TO SOU	14	888	63.4	676	6,304	5,593	711	112.7	89.8
	SOU TO OFF	13	725	55.8	963	4,799	3,937	862	121.9	97.8
	WST TO OFF	12	842	70.2	1,009	7,581	7,400	181	102.4	79.7
	WST TO SOU	26	1,993	76.7	864	9,606	8,800	806	109.2	86.0
14500	CLAY, CERAMIC AND REFRACTORY MINERALS *									
	US TO US	580	38,372	66.2	378	164,734	133,149	31,585	123.7	97.6
	OFF TO OFF	66	4,666	70.7	41	6,643	9,655	3,012DEF	68.8	60.3
	SOU TO SOU	181	12,082	66.8	304	46,411	35,448	10,963	130.9	104.9
	WST TO WST	244	15,089	61.8	321	38,098	36,516	1,582	104.3	83.1
	SOU TO OFF	57	3,560	62.5	867	42,743	30,833	11,910	138.6	112.7
	WST TO OFF	5	380	76.0	1,086	5,278	3,201	2,077	164.9	127.6
	SOU TO WST	18	1,311	72.8	1,120	17,639	12,567	5,072	140.4	111.6
	WST TO SOU	9	712	79.1	1,040	7,022	4,029	2,993	174.3	121.3

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCATED COST (11)
14700	CHEMICAL AND FERTILIZER MINERALS *									
	US TO US	5,025	387,744	77.2	174	803,470	848,497	45,027DEF	94.7	78.0
	OFF TO OFF	501	38,763	77.4	347	171,797	164,620	7,177	104.4	84.1
	SOU TO SOU	3,408	260,032	76.3	71	239,073	336,645	97,572DEF	71.0	59.3
	WST TO WST	908	71,416	78.7	263	253,232	224,088	29,144	113.0	91.0
	OFF TO SOU	15	1,322	88.1	310	6,222	5,632	590	110.5	89.3
	SOU TO OFF	60	5,224	87.1	975	39,713	36,970	2,743	107.4	81.5
	WST TO OFF	25	2,323	92.9	1,379	35,974	27,549	8,425	130.6	102.5
	SOU TO WST	19	1,354	71.3	1,249	14,768	12,027	2,741	122.8	93.9
	WST TO SOU	80	6,768	84.6	1,128	62,695	58,966	3,729	106.3	82.0
14714	PHOSPHATE ROCK									
	US TO US	3,740	289,720	77.5	90	293,390	418,313	124,923DEF	70.1	57.9
	SOU TO SOU	3,375	258,390	76.6	72	231,260	331,470	100,210DEF	69.8	58.3
	WST TO WST	305	25,930	85.0	95	21,505	27,315	5,810DEF	78.7	67.3
	SOU TO OFF	45	4,298	95.5	1,067	30,650	30,284	366	101.2	78.0
	SOU TO WST	15	1,105	73.7	1,205	9,975	9,244	731	107.9	82.0
14900	MISCELLANEOUS NONMETALLIC MINERALS, EXCEPT FUELS *									
	US TO US	462	42,119	91.2	822	289,613	265,134	24,479	109.2	87.0
	OFF TO OFF	58	4,162	72.0	313	22,025	18,738	3,287	117.5	101.9
	SOU TO SOU	38	3,543	93.2	223	9,508	8,411	1,097	113.0	92.1
	WST TO WST	451	29,942	66.4	511	157,680	147,950	9,730	106.6	86.6
	SOU TO OFF	10	824	82.4	892	5,124	4,299	825	119.2	90.2
	OFF TO WST	5	177	35.4	1,338	5,213	2,949	2,264	176.8	144.6
	WST TO OFF	63	2,925	46.4	2,397	80,310	83,561	3,251DEF	96.1	78.0
	WST TO SOU	21	1,262	60.1	1,741	25,691	16,332	9,359	157.3	122.0
20100	MEAT (INC POULTRY & SMALL GAME), FRESH, CHLD OR FRZN									
	US TO US	2,661	73,032	27.4	997	1,534,820	1,481,528	53,292	103.6	93.0
	OFF TO OFF	467	14,089	30.2	461	174,371	174,240	131	100.1	90.0
	SOU TO SOU	49	1,978	40.4	323	16,164	10,146	6,018	159.3	139.5
	WST TO WST	768	20,747	27.0	795	407,143	343,246	63,897	118.6	103.2
	OFF TO SOU	69	2,902	42.1	724	38,305	30,942	7,363	123.8	106.0
	SOU TO OFF	20	861	42.1	959	13,864	9,799	4,065	141.5	118.9
	OFF TO WST	5	212	42.4	1,510	4,531	4,761	230DEF	95.2	82.0
	WST TO OFF	1,252	23,848	19.0	1,287	803,368	840,539	37,171DEF	95.6	88.0
	SOU TO WST	6	186	31.0	1,798	5,858	4,777	1,081	122.6	107.2
	WST TO SOU	100	2,831	28.3	1,196	71,244	63,080	8,164	112.9	101.4
20111	CARCASSES (WHL OR PT), PRIMAL & FABR CUTS, BNLS MEAT									
	US TO US	1,592	30,150	18.9	1,179	934,567	1,018,717	84,150DEF	91.7	84.8
	OFF TO OFF	167	3,003	18.0	859	69,482	83,884	14,402DEF	82.8	70.9
	WST TO WST	228	5,590	24.5	933	114,080	125,393	11,313DEF	91.0	83.0
	OFF TO SOU	9	299	33.2	737	5,135	4,484	651	114.5	102.9
	WST TO OFF	1,132	20,011	17.7	1,298	707,097	765,207	58,110DEF	92.4	85.6
	WST TO SOU	54	1,182	21.9	1,269	38,730	39,411	681DEF	98.3	90.3
20200	DAIRY PRODUCTS									
	US TO US	696	24,375	35.0	891	330,077	252,464	77,613	130.7	112.3
	OFF TO OFF	253	8,288	32.8	474	73,075	67,252	5,823	108.7	96.3
	SOU TO SOU	58	1,850	31.9	360	15,278	11,194	4,084	136.5	121.4
	WST TO WST	263	9,605	36.5	881	122,665	86,318	36,347	142.1	119.7
	OFF TO SOU	32	1,161	36.3	704	17,037	12,588	4,449	135.3	116.3
	SOU TO OFF	14	500	35.7	927	8,407	6,994	1,413	120.2	110.7
	OFF TO WST	20	753	37.7	1,316	18,335	14,123	4,212	129.8	106.8
	WST TO OFF	74	2,710	36.6	1,087	55,295	41,156	14,139	134.4	114.4
	SOU TO WST	7	248	35.4	1,050	4,356	2,959	1,397	147.2	123.6
	WST TO SOU	25	973	38.9	879	15,569	10,080	5,489	154.5	130.1
20300	CANNED AND PRESERVED FRUITS, VEG & SEA FOODS									
	US TO US	2,201	89,551	40.7	1,272	1,769,339	1,329,814	439,525	133.1	110.8
	OFF TO OFF	385	14,767	38.3	463	146,275	132,539	13,736	110.4	96.5
	SOU TO SOU	100	3,458	34.6	480	35,825	26,773	9,052	133.8	114.2
	WST TO WST	803	34,391	42.8	1,104	618,298	414,185	204,113	149.3	122.7
	OFF TO SOU	82	3,162	38.6	777	49,094	35,407	13,687	138.7	119.2
	SOU TO OFF	190	6,303	33.2	1,144	120,313	110,546	9,767	108.8	93.1
	OFF TO WST	67	2,523	37.7	1,538	62,683	49,901	12,782	125.6	105.6
	WST TO OFF	398	17,623	44.3	2,211	523,031	408,341	114,690	128.1	106.6
	SOU TO WST	51	2,265	44.4	1,962	66,727	43,155	23,572	154.6	127.1
	WST TO SOU	119	4,979	41.8	2,065	141,093	102,887	38,206	137.1	113.1

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCA-TED COST (11)
20391	MXDLD OF CANNED AND PRESERVED FRUITS; SEAFOODS, VEGETABLES									
	US TO US	197	8,869	44.9	1,327	181,328	133,104	48,224	136.2	110.0
	OFF TO OFF	33	1,243	37.7	334	7,812	9,012	1,200DEF	86.7	76.3
	SOU TO SOU	6	217	36.2	992	1,373	1,225	148	112.1	97.2
	WST TO WST	78	3,968	50.9	1,284	75,702	44,836	30,866	168.8	138.4
	SOU TO OFF	23	462	20.1	1,084	6,695	12,712	6,017DEF	52.7	46.5
	WST TO OFF	45	2,387	53.0	2,600	73,833	55,065	18,768	134.1	105.9
	WST TO SOU	7	334	47.7	2,809	11,666	7,543	4,123	154.7	122.6
20400	GRAIN MILL PRODUCTS									
	US TO US	9,370	346,308	37.0	473	2,521,647	2,697,690	176,043DEF	93.5	80.6
	OFF TO OFF	3,289	115,782	35.2	393	779,043	948,351	169,308DEF	82.1	72.2
	SOU TO SOU	838	31,044	37.0	249	119,482	134,004	14,522DEF	89.2	78.4
	WST TO WST	3,828	143,918	37.6	416	836,765	969,689	132,924DEF	86.3	74.1
	OFF TO SOU	456	17,478	38.3	658	188,969	161,720	27,249	116.8	99.9
	SOU TO OFF	37	1,364	36.9	957	22,418	17,548	4,870	127.8	109.0
	OFF TO WST	114	2,631	23.0	1,367	88,411	70,271	18,140	125.8	109.1
	WST TO OFF	588	24,707	42.0	1,036	372,686	312,210	60,476	119.4	99.1
	SOU TO WST	10	369	36.9	731	5,802	3,382	2,420	171.6	145.3
	WST TO SOU	210	8,820	42.0	848	108,269	80,715	27,554	134.1	111.1
20411	WHEAT FLOUR, EXC BLENDED AND PREPARED									
	US TO US	1,892	75,265	39.8	397	580,203	642,039	61,836DEF	90.4	76.6
	OFF TO OFF	560	20,835	37.2	376	108,914	161,877	52,963DEF	67.3	59.0
	SOU TO SOU	81	3,083	38.1	338	19,387	15,135	4,252	128.1	110.8
	WST TO WST	777	31,786	40.9	348	181,319	233,488	52,169DEF	77.7	65.2
	OFF TO SOU	58	2,224	38.3	639	20,392	19,958	434	102.2	87.3
	WST TO OFF	343	14,404	42.0	1,009	209,448	182,086	27,362	115.0	95.9
	WST TO SOU	69	2,798	40.6	737	39,117	28,212	10,905	138.7	114.9
20421	PREPARED FEEDS FOR ANIMALS & FOWLS, EXC CANNED									
	US TO US	3,433	121,243	35.3	328	619,422	789,386	169,964DEF	78.5	68.7
	OFF TO OFF	1,201	41,469	34.5	357	228,464	320,318	91,854DEF	71.3	62.0
	SOU TO SOU	561	21,659	38.6	223	66,645	84,684	18,039DEF	78.7	69.1
	WST TO WST	1,404	50,967	36.3	278	223,637	299,006	75,369DEF	74.7	65.0
	OFF TO SOU	115	4,321	37.6	980	44,382	39,670	4,712	111.8	93.2
	SOU TO OFF	19	680	35.8	1,032	10,676	9,000	1,676	118.6	100.8
	OFF TO WST	17	502	29.5	1,191	12,688	8,755	3,933	144.9	124.1
	WST TO OFF	33	1,068	32.4	898	15,950	13,608	2,342	117.2	99.6
	WST TO SOU	22	945	43.0	1,033	12,586	9,902	2,684	127.1	104.3
20500	BAKERY PRODUCTS									
	US TO US	384	5,590	15.0	761	139,200	143,643	4,443DEF	96.9	90.4
	OFF TO OFF	153	2,273	14.9	842	46,009	59,130	13,121DEF	77.8	73.1
	SOU TO SOU	17	281	16.5	462	5,636	4,413	1,223	127.7	120.2
	WST TO WST	103	1,422	13.7	787	45,691	42,733	2,958	106.9	99.9
	OFF TO SOU	44	861	19.6	787	19,225	17,294	1,931	111.2	102.0
	OFF TO WST	18	246	13.7	1,817	11,588	11,013	575	105.2	97.5
	WST TO OFF	5	89	17.8	1,548	3,572	3,270	302	109.2	99.3
	SOU TO WST	7	119	17.0	1,129	4,538	3,050	1,488	148.8	135.7
	WST TO SOU	5	67	13.4	891	1,966	1,978	12DEF	99.4	96.6
20600	SUGAR (BEET AND CANE)									
	US TO US	1,547	79,183	51.2	660	753,537	578,974	174,563	130.2	107.1
	OFF TO OFF	205	9,766	47.6	350	77,859	65,343	12,516	119.2	103.3
	SOU TO SOU	272	14,401	52.9	415	103,273	69,732	33,541	148.1	124.7
	WST TO WST	879	44,634	50.8	882	418,848	332,469	86,379	126.0	102.5
	OFF TO SOU	13	656	50.5	553	6,891	4,938	1,953	139.6	110.3
	SOU TO OFF	66	4,127	62.5	903	51,933	38,548	13,385	134.7	110.0
	OFF TO WST	5	217	43.4	1,738	5,530	4,518	1,012	122.4	101.7
	WST TO OFF	66	3,452	52.3	1,432	67,346	47,803	19,543	140.9	112.6
	SOU TO WST	12	576	48.0	823	6,998	6,959	39	100.6	86.3
	WST TO SOU	29	1,354	46.7	760	16,859	10,684	6,175	157.8	129.0
20700	CONFECTIONERY AND RELATED PRODUCTS									
	US TO US	307	7,589	24.7	978	172,218	145,491	26,727	118.4	103.4
	OFF TO OFF	163	3,758	23.1	364	57,717	59,501	1,784DEF	97.0	88.6
	WST TO WST	64	1,445	22.6	1,036	40,465	33,936	6,529	119.2	100.1
	OFF TO SOU	25	620	24.8	719	13,541	9,314	4,227	145.4	130.8
	SOU TO OFF	8	282	35.3	582	3,521	2,702	819	130.3	113.7
	OFF TO WST	34	1,051	30.9	2,094	41,939	29,570	12,369	141.8	121.3
	WST TO OFF	5	136	27.2	2,330	5,219	3,843	1,376	135.8	115.6

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(8) OF REV. TO VARIABLE COST (10)	RATIO(8) OF REV. TO FULLY ALLOCATED COST (11)
20800	BEVERAGES AND FLAVORING EXTRACTS									
	US TO US	2,233	95,087	42.6	811	1,281,942	998,671	283,271	128.4	107.9
	OFF TO OFF	665	27,832	41.9	929	270,850	253,726	17,124	106.7	92.1
	SOU TO SOU	132	5,412	41.0	493	55,589	36,229	19,360	153.4	132.6
	WST TO WST	923	40,273	43.6	783	514,946	378,273	136,673	136.1	113.1
	OFF TO SOU	210	8,643	41.2	811	113,954	90,933	23,021	125.3	104.2
	SOU TO OFF	28	1,057	37.8	720	14,570	12,663	1,907	115.1	101.2
	OFF TO WST	63	2,255	35.8	1,766	87,363	51,522	35,841	169.6	143.1
	WST TO OFF	156	6,292	40.4	1,840	144,989	123,314	21,675	117.6	95.9
	SOU TO WST	24	830	34.6	1,824	29,214	16,399	12,815	178.1	151.4
	WST TO SOU	58	2,488	42.9	1,407	50,467	35,472	14,995	142.3	117.2
20821	BEER, ALE, PORTER, STOUT; BOTTLED, BBLS, KEGS									
	US TO US	1,276	54,879	43.0	781	667,622	501,736	165,886	133.1	111.3
	OFF TO OFF	249	10,468	42.0	832	117,648	102,702	14,946	114.6	97.7
	SOU TO SOU	89	3,641	40.9	453	31,766	21,885	9,881	145.1	124.8
	WST TO WST	696	30,431	43.7	763	369,152	268,962	100,190	137.3	113.8
	OFF TO SOU	157	6,459	41.1	797	83,474	65,659	17,815	127.1	107.5
	SOU TO OFF	8	351	43.9	838	4,072	3,079	993	132.3	112.7
	WST TO OFF	27	1,391	51.5	1,100	25,293	15,961	9,332	158.5	128.2
	SOU TO WST	5	209	41.8	922	3,131	2,072	1,059	151.1	125.2
	WST TO SOU	42	1,827	43.5	1,081	30,833	19,794	11,039	155.8	127.9
20900	MISC FOOD PREPARATIONS & KINDRED PRODUCTS									
	US TO US	4,793	213,480	44.5	631	2,061,180	1,770,755	290,425	116.4	97.8
	OFF TO OFF	1,453	63,930	44.0	386	445,835	446,061	226DEF	99.9	86.2
	SOU TO SOU	619	29,159	47.1	291	146,793	110,114	36,679	133.3	108.1
	WST TO WST	1,833	83,828	45.7	676	832,012	686,607	145,405	121.2	100.6
	OFF TO SOU	239	10,334	43.2	672	108,230	92,213	16,017	117.4	99.6
	SOU TO OFF	142	6,210	43.7	884	74,830	60,256	14,574	124.2	106.4
	OFF TO WST	108	4,018	37.2	1,398	106,347	80,723	25,624	131.7	110.6
	WST TO OFF	218	8,823	40.5	2,010	230,842	196,253	34,589	117.6	98.8
	SOU TO WST	16	570	35.6	1,197	9,049	7,982	1,067	113.4	95.3
	WST TO SOU	143	6,580	46.0	1,353	106,642	84,346	22,296	126.4	102.6
20923	SOYBEAN CAKE, MEAL, FLOUR, GRITS & OTH BY PRD									
	US TO US	1,358	76,482	56.3	369	346,459	372,199	25,740DEF	93.1	77.2
	OFF TO OFF	490	28,422	58.0	389	147,944	161,338	13,394DEF	91.7	76.3
	SOU TO SOU	229	12,927	56.4	239	42,588	37,553	5,035	113.4	94.0
	WST TO WST	489	26,231	53.6	316	103,247	117,539	14,292DEF	87.8	73.2
	OFF TO SOU	58	3,167	54.6	619	32,148	32,694	546DEF	98.3	79.6
	SOU TO OFF	13	894	68.8	189	3,234	2,830	404	114.3	97.0
	WST TO SOU	46	2,639	57.4	897	14,890	18,467	3,577DEF	80.6	68.7
20990	MISCELLANEOUS FOOD PREPARATIONS									
	US TO US	1,909	69,136	36.2	872	980,363	785,015	195,348	124.9	105.2
	OFF TO OFF	653	23,831	36.5	318	179,304	181,203	1,899DEF	99.0	88.0
	SOU TO SOU	134	4,739	35.3	366	27,652	26,925	727	102.7	89.8
	WST TO WST	669	24,309	36.3	978	380,830	269,282	111,548	141.4	116.7
	OFF TO SOU	122	4,098	33.6	748	60,435	47,108	13,327	128.3	111.6
	SOU TO OFF	31	1,083	34.9	867	16,338	14,266	2,072	114.5	99.6
	OFF TO WST	83	3,011	36.3	1,661	81,051	61,209	19,842	132.4	110.9
	WST TO OFF	149	5,740	38.5	2,362	172,236	142,275	29,961	121.1	98.8
	SOU TO WST	6	193	32.2	1,413	4,269	3,054	1,215	139.8	117.2
	WST TO SOU	52	2,112	40.6	2,127	58,008	39,633	18,375	146.4	114.0
21100	CIGARETTES **									
	US TO US	126	3,777	30.0	1,363	128,248	79,234	49,014	161.9	141.4
	OFF TO OFF	14	316	22.6	563	9,257	6,993	2,264	132.4	115.9
	SOU TO SOU	12	353	29.4	575	10,020	6,783	3,237	147.7	134.6
	SOU TO OFF	27	854	31.6	707	17,642	11,804	5,838	149.5	133.5
	OFF TO WST	18	530	29.4	1,927	24,621	14,798	9,823	166.4	142.9
	SOU TO WST	46	1,322	28.7	2,204	66,088	38,658	27,430	171.0	148.1
22100	COTTON BROAD WOVEN FABRICS *									
	US TO US	103	2,300	22.3	779	49,274	32,402	16,872	152.1	135.1
	SOU TO SOU	37	883	23.9	281	8,541	5,479	3,062	155.9	141.1
	SOU TO OFF	28	559	20.0	784	12,034	9,197	2,837	130.8	118.1
	SOU TO WST	18	356	19.8	1,713	15,818	9,059	6,759	174.6	152.6

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCATED COST (11)
22700	CARPETS AND RUGS, TEXTILE									
	US TO US	168	3,278	19.5	1,373	117,817	89,668	28,149	131.4	118.3
	OFF TO OFF	10	117	11.7	336	2,427	2,224	203	109.1	103.7
	SOU TO SOU	17	310	18.2	468	4,494	3,871	623	116.1	107.9
	WST TO WST	11	183	16.6	1,388	8,843	6,487	2,356	136.3	123.3
	OFF TO SOU	5	119	23.8	952	2,152	1,467	685	146.7	130.3
	SOU TO OFF	48	900	18.8	709	17,786	18,110	324DEF	98.2	90.9
	OFF TO WST	8	190	23.8	2,002	11,373	7,665	3,708	148.4	129.6
	WST TO OFF	5	146	29.2	2,910	8,158	5,161	2,997	158.1	132.4
	SOU TO WST	63	1,294	20.5	1,821	61,359	44,072	17,287	139.2	123.2
22900	MISCELLANEOUS BASIC TEXTILES									
	US TO US	290	4,834	16.7	806	115,584	88,758	26,826	130.2	114.0
	OFF TO OFF	86	1,257	14.6	376	21,451	19,931	1,520	107.6	100.7
	SOU TO SOU	40	780	19.5	304	9,425	7,019	2,406	134.3	122.5
	WST TO WST	57	1,042	18.3	916	26,701	18,910	7,791	141.2	125.9
	OFF TO SOU	21	202	9.6	843	8,131	6,338	1,793	128.2	120.7
	SOU TO OFF	29	568	19.6	783	11,368	9,140	2,228	124.4	111.7
	WST TO OFF	23	240	10.4	886	8,840	7,281	1,559	121.4	113.1
	SOU TO WST	29	663	22.9	1,748	25,324	17,112	8,212	148.0	129.3
24100	PRIMARY FOREST PRODUCTS (PULPWOOD, LOGS, POSTS, ETC.)*									
	US TO US	11,718	629,321	53.7	146	1,343,688	1,801,638	457,950DEF	74.6	66.5
	OFF TO OFF	896	40,979	45.7	159	119,344	185,819	66,475DEF	64.2	57.1
	SOU TO SOU	6,051	348,641	57.6	123	583,763	750,808	167,045DEF	77.8	66.9
	WST TO WST	4,619	233,033	50.5	106	591,069	821,043	229,974DEF	72.0	62.2
	OFF TO SOU	5	162	32.4	628	2,080	1,545	535	134.6	110.3
	SOU TO OFF	53	2,083	39.3	858	19,238	16,495	2,743	116.6	99.8
	WST TO OFF	18	673	37.4	1,164	10,397	9,246	1,151	112.4	93.1
	SOU TO WST	58	3,250	56.0	170	10,264	9,616	648	106.7	91.4
	WST TO SOU	14	544	38.9	773	5,346	4,838	508	110.5	92.4
24111	SAWLOGS									
	US TO US	1,165	42,232	36.3	111	88,779	167,501	78,722DEF	53.0	47.9
	OFF TO OFF	26	933	35.9	226	3,895	3,723	172	103.0	92.1
	SOU TO SOU	83	3,110	37.5	192	10,244	11,123	879DEF	92.1	81.1
	WST TO WST	1,028	37,082	36.1	86	61,429	141,298	79,869DEF	43.5	39.5
	WST TO OFF	13	479	36.8	809	5,686	5,248	438	108.3	91.3
24114	PULPWOOD LOGS									
	US TO US	6,700	385,360	57.5	132	700,905	989,216	288,311DEF	70.9	61.3
	OFF TO OFF	700	32,980	47.1	134	84,010	145,861	61,851DEF	57.6	51.2
	SOU TO SOU	4,340	257,275	59.3	122	395,610	541,743	146,133DEF	73.0	62.9
	WST TO WST	1,603	92,003	57.3	152	212,565	292,684	80,119DEF	72.6	62.4
	SOU TO OFF	5	205	41.0	208	855	1,130	275DEF	75.7	66.6
	SOU TO WST	50	2,875	57.5	147	7,865	7,798	67	100.9	86.6
24115	PULPWOOD AND OTHER WOOD CHIPS									
	US TO US	3,298	181,727	55.1	161	429,863	533,337	103,474DEF	80.6	69.9
	OFF TO OFF	159	6,544	41.2	160	26,734	30,916	4,182DEF	86.5	77.2
	SOU TO SOU	1,294	75,893	58.6	109	119,006	146,120	27,114DEF	81.4	69.8
	WST TO WST	1,819	98,171	54.0	198	278,363	350,071	71,708DEF	79.5	67.7
	SOU TO OFF	20	836	41.8	255	2,758	3,828	1,070DEF	72.0	62.6
24200	LUMBER AND DIMENSION STOCK									
	US TO US	4,492	181,985	40.5	1,263	3,072,733	2,405,567	667,166	127.7	104.2
	OFF TO OFF	238	9,729	40.9	309	93,645	88,107	5,538	106.3	92.1
	SOU TO SOU	412	18,920	45.9	339	95,644	74,987	20,657	127.5	107.4
	WST TO WST	2,359	94,937	40.3	1,078	1,466,370	1,051,044	415,326	139.5	113.6
	OFF TO SOU	65	3,577	55.0	928	30,871	21,861	9,010	141.2	117.1
	SOU TO OFF	142	6,160	43.4	722	69,362	55,965	13,397	123.9	107.8
	OFF TO WST	16	595	37.2	1,991	13,555	11,125	2,430	121.8	101.1
	WST TO OFF	998	37,873	37.9	2,363	1,044,595	915,994	128,601	114.0	92.7
	SOU TO WST	15	630	42.0	863	8,386	6,461	1,925	129.8	109.6
	WST TO SOU	247	9,536	38.6	2,347	280,305	210,023	70,282	133.5	107.4
24211	LUMBER									
	US TO US	3,623	150,063	41.5	1,395	2,873,170	2,223,204	649,966	129.2	105.0
	OFF TO OFF	130	6,340	48.8	334	40,190	35,834	4,356	112.2	95.6
	SOU TO SOU	275	13,800	50.2	391	75,525	57,777	17,748	130.7	108.9
	WST TO WST	2,065	84,660	41.0	1,150	1,385,770	975,628	410,142	142.0	115.3
	OFF TO SOU	55	3,150	57.3	923	26,080	18,869	7,211	138.2	114.4
	SOU TO OFF	100	4,555	45.6	753	48,565	39,756	8,809	122.2	101.8
	OFF TO WST	15	570	38.0	1,525	12,730	10,115	2,615	125.9	104.2
	WST TO OFF	933	35,933	38.5	2,404	1,002,690	874,939	127,751	114.6	93.0
	SOU TO WST	10	490	49.0	844	5,200	3,493	1,707	148.9	125.3
	WST TO SOU	240	9,325	38.9	2,375	276,360	206,793	69,567	133.6	107.5

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCA-TED COST (11)
24300	MILLWORK, VENEER, PLYWOOD, PREFAB STRTL WOOD PRD									
	US TO US	1,848	74,603	40.4	1,379	1,482,123	1,183,023	299,100	125.3	101.7
	OFF TO OFF	55	1,831	33.3	397	17,182	18,163	981DEF	94.6	84.9
	SOU TO SOU	143	6,214	43.5	403	37,901	32,053	5,848	118.2	100.9
	WST TO WST	807	32,894	40.8	1,124	533,580	389,796	143,784	136.9	111.8
	OFF TO SOU	9	277	30.8	660	4,748	3,126	1,622	151.9	133.4
	SOU TO OFF	61	2,635	43.2	801	32,824	25,339	7,485	129.5	109.3
	OFF TO WST	9	265	29.4	1,515	6,872	5,752	1,120	119.5	102.2
	WST TO OFF	551	22,257	40.4	2,323	644,623	543,399	101,224	118.6	95.3
	SOU TO WST	25	843	33.7	1,214	16,301	12,278	4,023	132.8	112.4
	WST TO SOU	186	7,389	39.7	2,397	188,112	153,119	34,993	122.9	98.7
24321	VENEER AND PLYWOOD									
	US TO US	1,998	85,434	42.8	1,572	1,342,789	1,042,417	300,372	128.8	103.9
	OFF TO OFF	32	1,380	43.1	310	9,122	9,288	166DEF	98.2	86.3
	SOU TO SOU	138	6,048	43.8	397	35,832	30,634	5,198	117.0	99.7
	WST TO WST	710	30,493	42.9	1,113	485,493	344,680	140,813	140.9	114.2
	OFF TO SOU	6	198	33.0	643	2,925	1,963	962	149.0	129.0
	SOU TO OFF	58	2,588	44.6	799	31,933	24,270	7,663	131.6	109.8
	OFF TO WST	7	231	33.0	1,481	5,226	4,498	728	116.2	98.1
	WST TO OFF	472	20,290	43.0	2,363	593,623	487,367	106,256	121.8	97.3
	SOU TO WST	22	772	35.1	1,129	13,335	10,292	3,043	129.6	109.3
	WST TO SOU	153	6,438	42.1	2,399	165,300	129,423	35,877	127.7	102.0
24400	WOODEN CONTAINERS *									
	US TO US	291	6,064	20.8	979	105,436	101,076	4,360	104.3	91.9
	OFF TO OFF	21	334	15.9	264	3,978	4,398	420DEF	90.5	83.1
	SOU TO SOU	57	1,127	19.8	408	10,092	9,214	878	109.5	99.0
	WST TO WST	72	1,823	25.3	1,273	33,887	29,100	4,787	116.4	98.1
	SOU TO OFF	95	1,831	19.3	853	30,204	32,767	2,563DEF	92.2	83.3
	OFF TO WST	5	69	13.8	1,759	4,316	3,191	1,125	135.3	124.0
	WST TO OFF	12	227	18.9	1,956	5,910	7,490	1,580DEF	78.9	69.3
	SOU TO WST	18	408	22.7	1,448	9,428	9,000	428	104.8	92.0
	WST TO SOU	9	232	25.8	1,916	6,579	4,919	1,660	133.7	112.2
24900	MISCELLANEOUS WOOD PRODUCTS									
	US TO US	1,069	38,370	35.9	1,104	619,089	482,302	136,787	128.4	106.0
	OFF TO OFF	163	4,913	30.1	384	46,113	42,723	3,390	107.9	96.2
	SOU TO SOU	88	3,150	35.8	386	21,738	16,566	5,172	131.2	113.1
	WST TO WST	422	15,886	37.6	1,038	230,398	178,004	52,394	129.4	109.2
	OFF TO SOU	12	319	26.6	888	6,233	4,256	1,977	146.5	127.1
	SOU TO OFF	133	4,732	35.6	744	62,633	47,703	14,930	131.3	112.2
	OFF TO WST	10	318	31.8	1,400	7,650	6,003	1,647	127.4	108.1
	WST TO OFF	166	6,968	42.0	2,017	171,946	136,638	35,308	125.8	101.2
	SOU TO WST	28	957	34.2	989	14,382	10,887	3,495	132.1	120.8
	WST TO SOU	49	2,130	43.5	2,226	56,016	39,542	16,474	141.7	115.1
25000	FURNITURE AND FIXTURES									
	US TO US	2,111	17,571	8.3	889	790,935	700,362	90,573	112.9	107.3
	OFF TO OFF	521	4,017	7.7	473	122,143	140,497	18,354DEF	86.9	83.0
	SOU TO SOU	283	2,076	7.3	418	57,292	51,063	6,229	112.2	100.2
	WST TO WST	293	2,803	9.6	953	130,590	105,684	24,906	123.6	110.3
	OFF TO SOU	76	758	10.0	767	31,215	25,780	5,435	121.1	119.1
	SOU TO OFF	369	2,963	8.0	789	113,596	110,261	3,335	103.0	90.6
	OFF TO WST	192	1,837	9.6	1,512	120,537	99,102	21,435	121.6	113.9
	WST TO OFF	55	602	10.9	1,236	29,523	26,493	3,030	111.4	104.3
	SOU TO WST	299	2,310	7.7	1,384	171,816	130,967	40,849	131.2	123.7
	WST TO SOU	23	197	8.6	1,532	14,223	10,515	3,708	135.3	127.4
26100	PULP AND PULP MILL PRODUCTS *									
	US TO US	833	48,461	58.2	877	552,834	380,458	172,376	145.3	114.9
	OFF TO OFF	138	7,293	52.8	313	49,182	37,530	11,652	131.0	110.8
	SOU TO SOU	228	12,933	56.7	319	89,097	45,791	43,306	194.6	161.3
	WST TO WST	179	10,119	56.5	867	107,372	77,528	29,844	138.5	108.7
	OFF TO SOU	7	266	38.0	872	4,343	3,327	1,016	130.5	112.3
	SOU TO OFF	142	8,698	61.3	908	126,560	71,024	55,536	178.2	141.7
	WST TO OFF	102	6,190	60.7	2,249	120,702	104,819	15,883	115.2	87.3
	SOU TO WST	16	901	56.3	1,484	17,144	9,738	7,406	176.1	135.8
	WST TO SOU	39	1,933	49.6	1,902	36,015	28,912	7,103	124.6	98.0

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCATED COST (11)
26200	PAPER, EXCEPT BUILDING PAPER *									
	US TO US	3,192	121,880	38.1	777	1,737,189	1,282,120	455,069	135.5	114.3
	OFF TO OFF	1,198	42,116	35.2	800	536,034	438,834	97,200	122.2	109.7
	SOU TO SOU	240	11,487	47.9	398	97,031	57,223	39,808	169.6	144.2
	WST TO WST	749	31,074	41.5	800	438,107	295,177	142,930	148.4	123.1
	OFF TO SOU	135	4,243	31.3	780	83,784	65,824	17,960	127.3	109.2
	SOU TO OFF	247	10,083	40.8	843	150,380	110,215	40,165	136.4	115.7
	OFF TO WST	223	6,648	29.8	1,322	174,929	144,742	30,187	120.9	103.4
	WST TO OFF	213	8,127	38.2	1,140	149,002	112,901	36,101	132.0	109.8
	SOU TO WST	104	4,739	45.6	1,020	89,392	50,887	38,505	175.7	145.3
	WST TO SOU	63	2,561	40.7	921	38,490	26,317	12,173	146.3	122.0
26213	PRINTING PAPER, COATED OR UNCOATED									
	US TO US	1,483	53,380	36.0	807	782,453	629,627	152,826	124.3	107.0
	OFF TO OFF	667	23,629	35.4	824	304,682	264,328	40,354	115.3	100.3
	SOU TO SOU	39	1,362	34.9	449	13,266	8,538	4,728	155.4	133.5
	WST TO WST	273	9,831	36.0	793	148,930	106,679	42,251	139.6	118.4
	OFF TO SOU	92	2,777	30.2	976	49,019	38,726	10,293	126.6	109.0
	SOU TO OFF	71	2,618	36.9	778	36,711	28,764	7,947	127.6	107.3
	OFF TO WST	163	4,803	29.4	1,473	127,833	107,027	20,806	119.4	102.6
	WST TO OFF	99	3,544	35.8	940	59,433	46,817	12,616	126.9	107.8
	SOU TO WST	34	1,028	30.2	1,408	27,339	17,918	9,421	152.6	129.9
	WST TO SOU	25	888	35.5	939	14,918	10,510	4,408	141.9	120.4
26311	PAPERBOARD, PULPBOARD & FIBERBOARD, EXC INSULATING BD									
	US TO US	3,315	136,079	41.0	734	1,865,322	1,342,183	523,139	139.0	114.7
	OFF TO OFF	527	19,488	37.0	390	173,410	148,595	24,815	116.7	101.7
	SOU TO SOU	507	23,636	46.6	386	183,425	108,033	75,392	169.8	143.1
	WST TO WST	808	37,627	46.6	654	459,619	316,428	143,191	145.3	116.4
	OFF TO SOU	65	2,418	37.2	871	29,332	21,627	7,705	135.6	115.1
	SOU TO OFF	1,113	52,768	47.4	848	671,984	499,064	172,920	134.6	111.4
	OFF TO WST	32	1,002	31.3	1,028	28,946	24,027	4,919	120.5	102.0
	WST TO OFF	213	9,473	44.5	1,198	161,072	122,828	38,244	131.1	107.0
	SOU TO WST	172	8,408	48.9	1,299	130,313	84,486	45,827	154.2	124.4
	WST TO SOU	58	2,475	42.7	616	27,221	17,093	10,128	159.2	132.0
26400	CONVERTED PAPER & PAPER PRD EXC CONTAINERS & BOXES									
	US TO US	2,763	52,341	18.9	672	864,605	804,906	59,699	107.4	97.0
	OFF TO OFF	1,114	19,197	17.2	338	220,960	254,236	33,276DEF	86.9	80.8
	SOU TO SOU	278	5,312	19.1	489	65,987	51,263	14,724	128.7	117.4
	WST TO WST	693	12,820	18.5	826	251,670	217,682	33,988	115.6	103.4
	OFF TO SOU	159	2,783	17.5	860	36,420	34,448	1,972	105.7	94.0
	SOU TO OFF	218	5,298	24.3	738	100,832	89,822	11,010	112.3	99.4
	OFF TO WST	72	1,550	21.5	1,742	54,520	44,237	10,283	123.2	107.3
	WST TO OFF	87	2,053	23.6	1,200	44,998	41,036	3,962	109.7	99.8
	SOU TO WST	117	2,397	20.5	1,182	55,687	43,068	12,619	129.3	113.6
	WST TO SOU	27	627	23.2	883	11,731	9,054	2,677	129.6	114.0
26471	SANITARY TISSUES AND HEALTH PRODUCTS									
	US TO US	1,868	31,203	16.7	377	486,834	495,713	8,879DEF	98.2	85.9
	OFF TO OFF	897	15,041	16.8	325	168,784	199,817	31,033DEF	84.5	75.7
	SOU TO SOU	176	2,936	16.8	396	36,957	31,397	5,560	117.7	100.8
	WST TO WST	468	7,629	16.3	853	153,964	143,503	10,461	107.3	96.7
	OFF TO SOU	107	1,913	17.9	716	38,406	38,753	347DEF	99.1	89.7
	SOU TO OFF	78	1,281	16.4	710	28,767	29,230	463DEF	98.4	90.1
	OFF TO WST	28	498	17.8	1,615	17,082	16,043	1,039	106.5	95.0
	WST TO OFF	37	656	17.7	889	14,511	13,301	1,210	109.1	98.3
	SOU TO WST	66	1,034	15.7	879	23,737	19,571	4,166	121.3	109.9
	WST TO SOU	11	195	17.7	1,076	4,606	4,078	528	112.9	101.3
26500	CONTAINERS&BOXES, PAPERBOARD, FIBERBOARD & PULPBOARD									
	US TO US	1,083	17,778	16.4	961	344,466	301,994	42,472	114.1	104.0
	OFF TO OFF	391	5,792	14.8	370	86,702	89,236	2,534DEF	97.2	90.8
	SOU TO SOU	140	2,128	15.2	337	27,401	21,558	5,843	127.1	118.3
	WST TO WST	302	4,924	16.3	383	92,865	76,773	16,092	121.0	110.7
	OFF TO SOU	68	1,319	19.4	689	28,387	24,475	3,912	116.0	104.4
	SOU TO OFF	30	490	16.3	724	10,902	9,125	1,777	119.5	109.4
	OFF TO WST	81	1,676	20.7	1,606	63,621	56,002	7,619	113.6	100.6
	WST TO OFF	16	372	23.3	1,089	15,338	11,297	4,041	135.8	119.5
	SOU TO WST	25	492	19.7	1,106	12,824	9,683	3,141	132.4	117.9
	WST TO SOU	20	373	18.7	781	8,426	5,845	2,581	144.2	129.7

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(%) OF REV. TO VARIABLE COST (10)	RATIO(%) OF REV. TO FULLY ALLOCA-TED COST (11)
26600	BUILDING PAPER AND BUILDING BOARD *									
	US TO US	684	21,781	31.8	836	328,216	272,623	55,593	120.4	103.9
	OFF TO OFF	160	4,910	30.7	428	50,311	47,993	2,318	104.8	93.5
	SOU TO SOU	61	1,928	31.6	515	20,675	14,504	6,171	142.5	124.6
	WST TO WST	131	4,279	32.7	882	63,691	48,768	14,923	130.6	111.1
	OFF TO SOU	39	1,091	28.0	899	14,528	13,191	1,337	110.1	95.8
	SOU TO OFF	112	3,993	35.8	941	65,957	54,977	10,980	120.0	103.8
	OFF TO WST	40	1,292	32.3	1,272	30,863	26,921	3,942	114.6	97.9
	WST TO OFF	59	1,963	33.3	1,846	33,446	29,300	4,146	114.2	97.3
	SOU TO WST	54	1,634	30.3	1,554	36,490	27,565	8,925	132.4	112.9
	WST TO SOU	16	594	37.1	1,143	10,055	7,406	2,649	135.8	113.4
27200	PERIODICALS **									
	US TO US	142	3,815	26.9	1,386	96,907	83,259	13,648	116.4	101.1
	OFF TO OFF	51	1,237	24.3	736	21,029	19,455	1,574	108.1	94.2
	WST TO WST	30	750	25.0	1,337	20,016	21,922	1,906DEF	91.3	83.1
	OFF TO SOU	7	219	31.3	778	4,143	2,720	1,423	152.3	133.0
	OFF TO WST	47	1,381	29.4	1,996	45,967	33,677	12,290	136.5	106.8
28100	INDUSTRIAL, INORGANIC AND ORGANIC CHEMICALS									
	US TO US	7,419	457,316	61.6	838	4,821,415	3,083,640	1,738,775	156.3	129.6
	OFF TO OFF	2,173	118,700	54.6	320	979,169	651,916	327,253	150.2	127.8
	SOU TO SOU	1,042	65,775	63.1	326	426,715	240,185	186,530	177.7	167.7
	WST TO WST	2,301	104,144	45.3	831	1,336,930	1,018,649	318,281	131.2	121.6
	OFF TO SOU	242	13,077	54.0	827	171,246	96,751	74,495	177.0	147.1
	SOU TO OFF	342	20,980	61.3	796	292,944	178,248	114,696	164.3	136.7
	OFF TO WST	187	8,953	47.9	1,278	232,400	134,008	98,392	173.4	148.4
	WST TO OFF	459	33,628	73.3	1,364	648,832	461,661	187,171	140.5	110.1
	SOU TO WST	76	4,010	52.8	1,046	77,780	42,671	35,109	182.3	149.8
	WST TO SOU	396	28,002	70.7	1,191	434,339	260,894	173,445	166.5	130.0
28123	SODIUM COMPOUNDS, EXC SODIUM ALKALIES									
	US TO US	1,113	76,004	68.3	778	834,920	536,245	298,675	155.7	122.5
	OFF TO OFF	438	25,222	57.6	331	198,628	137,541	61,087	144.4	122.3
	SOU TO SOU	73	5,459	72.8	388	36,502	17,410	19,092	209.7	167.4
	WST TO WST	361	29,276	81.1	925	330,590	203,232	127,358	162.7	122.9
	OFF TO SOU	47	2,706	57.6	711	32,451	20,119	12,332	161.3	131.5
	SOU TO OFF	40	2,574	64.4	723	27,678	18,196	9,482	152.1	122.4
	OFF TO WST	32	1,518	47.4	1,270	35,457	21,555	13,902	164.5	130.9
	WST TO OFF	79	6,229	78.8	1,880	128,807	89,030	39,777	144.6	110.3
	WST TO SOU	37	2,777	75.1	1,593	40,946	27,234	13,712	150.3	114.6
28139	INDUSTRIAL GASES, NOT ELSEWHERE CLASSIFIED									
	US TO US	254	18,179	71.6	767	222,333	140,235	82,098	158.5	127.3
	OFF TO OFF	51	2,542	49.8	283	23,237	13,626	9,611	170.5	147.0
	SOU TO SOU	21	1,804	85.9	293	10,456	4,933	5,523	212.0	177.5
	WST TO WST	46	4,099	89.1	360	39,103	23,492	15,611	166.5	142.1
	SOU TO OFF	56	4,608	82.3	930	65,451	39,184	26,267	167.0	133.1
	WST TO OFF	42	4,331	103.1	1,468	66,639	49,631	17,008	134.3	102.2
	SOU TO WST	5	196	39.2	731	4,676	2,236	2,440	209.1	182.4
	WST TO SOU	11	813	73.9	328	8,302	4,582	3,720	181.2	146.3
28198	ANHYDROUS AMMONIA									
	US TO US	702	31,287	44.6	327	218,003	169,377	48,626	128.7	110.7
	OFF TO OFF	168	6,150	36.6	188	43,936	34,963	8,973	125.7	112.9
	SOU TO SOU	101	3,949	39.1	429	45,511	30,679	14,832	148.3	123.0
	WST TO WST	396	16,884	42.6	273	102,430	86,295	16,135	118.7	102.5
	OFF TO SOU	13	797	61.3	382	6,840	4,015	2,825	170.4	142.5
	SOU TO OFF	7	337	48.1	866	2,506	1,974	532	127.0	109.1
	WST TO SOU	12	789	65.8	980	10,093	7,713	2,380	130.9	110.5
28200	PLSTC MATERIALS & SYN RESINS, SYN RUBBERS & FIBERS *									
	US TO US	1,384	69,890	50.5	796	1,145,150	676,707	468,443	169.2	137.8
	OFF TO OFF	310	14,298	46.1	493	187,920	118,385	69,535	158.7	134.1
	SOU TO SOU	99	4,068	41.1	439	40,239	22,500	17,739	178.9	152.6
	WST TO WST	336	20,167	60.0	735	274,291	145,133	129,158	189.0	150.9
	OFF TO SOU	50	2,269	45.4	751	36,565	22,720	13,845	160.9	136.7
	SOU TO OFF	77	3,885	50.5	962	72,114	41,003	31,111	175.9	144.8
	OFF TO WST	72	3,004	41.7	1,039	103,323	67,898	35,425	152.2	127.3
	WST TO OFF	229	14,792	64.6	1,453	313,013	195,274	117,739	160.3	128.4
	SOU TO WST	23	828	36.0	1,326	27,937	14,510	13,427	192.5	161.9
	WST TO SOU	102	6,579	64.5	882	89,728	49,264	40,464	182.1	144.6

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCATED COST (11)
28400	SOAP, DTRGNS & CLNG PREPS; COSMCS, OTH TOILET PREPS									
	US TO US	869	25,983	29.9	829	473,151	366,389	106,762	129.1	113.4
	OFF TO OFF	298	8,117	27.2	718	110,711	106,778	3,933	103.7	98.3
	SOU TO SOU	61	2,051	33.6	479	23,072	14,299	8,773	161.4	141.0
	WST TO WST	286	8,397	29.4	881	170,933	128,328	42,605	133.2	118.8
	OFF TO SOU	96	3,110	32.4	728	50,897	36,553	14,344	139.2	121.7
	SOU TO OFF	10	379	37.9	898	5,185	3,934	1,251	131.8	113.9
	OFF TO WST	68	2,193	32.4	1,876	75,503	54,328	21,175	139.0	118.6
	WST TO OFF	20	583	29.2	1,749	17,413	13,619	3,794	127.9	107.7
	SOU TO WST	11	481	43.7	1,737	13,435	7,856	5,579	171.0	139.7
	WST TO SOU	6	182	30.3	957	4,100	2,696	1,404	152.1	133.1
28500	PAINTS, VARNISHES, LACQUERS, ENAMELS & ALLIED PRDS									
	US TO US	142	4,867	34.3	734	101,373	71,258	30,115	142.3	123.2
	OFF TO OFF	43	1,290	30.0	933	18,561	16,238	2,323	114.3	102.3
	SOU TO SOU	13	451	34.7	422	6,160	3,443	2,717	178.9	159.7
	WST TO WST	37	1,208	32.3	831	20,962	16,939	4,023	123.7	108.3
	OFF TO SOU	10	323	32.3	888	11,427	7,707	3,720	148.3	130.2
	OFF TO WST	13	387	29.8	1,372	14,066	9,843	4,223	142.9	124.3
	WST TO OFF	12	709	59.0	1,434	17,109	11,002	6,107	155.5	126.6
28600	GUM AND WOOD CHEMICALS									
	US TO US	281	11,257	40.0	731	154,178	118,117	36,061	130.5	112.1
	OFF TO OFF	20	771	38.6	872	8,143	6,074	2,069	134.1	117.9
	SOU TO SOU	68	3,029	44.5	372	23,775	15,628	8,147	152.1	131.0
	WST TO WST	52	2,121	40.8	717	26,918	19,311	7,607	139.4	118.7
	SOU TO OFF	83	3,108	37.5	986	53,108	44,482	8,626	119.4	103.7
	WST TO OFF	15	606	40.3	1,082	11,432	7,749	3,683	147.5	119.0
	SOU TO WST	30	1,089	36.3	1,288	24,727	19,854	4,873	124.5	108.2
	WST TO SOU	8	283	35.4	649	3,546	2,912	634	121.8	104.2
28712	SUPERPHOSPHATE									
	US TO US	1,393	89,288	64.0	347	846,723	669,407	177,316	126.5	110.2
	OFF TO OFF	127	7,723	60.8	230	38,000	33,036	4,964	115.0	98.9
	SOU TO SOU	496	30,767	62.0	228	124,083	78,976	45,107	157.1	129.6
	WST TO WST	374	24,790	66.3	439	167,799	116,508	51,291	144.0	113.6
	OFF TO SOU	15	865	57.7	433	6,504	4,481	2,023	145.1	120.0
	SOU TO OFF	178	11,086	62.2	1,063	141,860	112,443	29,417	126.2	100.9
	OFF TO WST	3	215	71.8	329	2,409	1,751	658	137.6	113.0
	WST TO OFF	4	297	74.2	983	7,078	4,981	2,097	142.1	110.2
	SOU TO WST	160	11,104	69.4	1,308	143,202	108,067	35,135	132.5	102.4
	WST TO SOU	22	1,509	68.6	614	14,088	7,844	6,244	179.6	140.9
28713	AMMONIATING FERTILIZER SOLUTION									
	US TO US	327	15,929	48.7	311	101,862	81,333	20,529	125.2	107.6
	OFF TO OFF	80	3,801	47.5	273	24,308	20,929	3,379	116.1	101.4
	SOU TO SOU	124	6,099	49.2	238	27,403	21,967	5,436	124.7	107.7
	WST TO WST	89	4,352	48.9	368	34,818	25,688	9,130	135.5	113.7
	OFF TO SOU	6	283	47.2	489	2,290	2,113	177	108.4	93.1
	SOU TO OFF	19	925	48.7	469	8,031	6,578	1,453	122.1	104.9
28714	MISCELLANEOUS FERTILIZER COMPOUNDS									
	US TO US	823	50,288	61.1	447	339,594	243,457	96,137	139.5	112.3
	OFF TO OFF	138	8,294	60.1	267	47,284	39,831	7,453	118.7	101.0
	SOU TO SOU	268	16,121	60.2	294	66,283	44,600	21,683	148.6	121.8
	WST TO WST	277	16,916	61.1	439	118,283	86,867	31,416	136.2	111.2
	OFF TO SOU	17	837	49.2	388	9,447	5,324	4,123	177.4	145.2
	SOU TO OFF	46	3,920	85.2	1,051	49,286	34,826	14,460	141.5	111.1
	OFF TO WST	4	189	47.3	982	3,646	2,632	1,014	138.5	111.8
	SOU TO WST	48	3,410	71.0	1,015	42,042	29,965	12,077	140.3	111.7
28799	AGRICULTURAL CHEMICALS,NEC									
	US TO US	130	5,271	40.5	818	101,421	56,538	44,883	179.4	151.5
	OFF TO OFF	21	791	37.7	503	10,213	6,910	3,303	147.8	127.7
	SOU TO SOU	14	940	67.1	359	9,882	3,141	6,741	314.6	253.6
	WST TO WST	44	1,677	38.1	900	29,948	16,675	13,273	179.6	150.1
	OFF TO SOU	6	211	35.2	881	4,219	2,503	1,716	168.6	143.8
	SOU TO OFF	8	270	33.8	949	6,739	3,726	3,013	180.9	150.1
	OFF TO WST	17	611	35.9	1,217	18,444	10,729	7,715	171.9	143.4
	WST TO OFF	7	231	33.0	1,941	9,304	6,184	3,120	150.5	126.7
	SOU TO WST	10	416	41.6	1,028	10,754	5,513	5,241	195.1	166.3

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCA-TED COST (11)
28900	MISCELLANEOUS CHEMICAL PRODUCTS									
	US TO US	1,709	84,175	49.4	731	1,138,502	731,145	407,357	155.7	129.2
	OFF TO OFF	377	15,655	41.6	289	148,182	128,327	19,855	115.5	101.0
	SOU TO SOU	115	6,858	59.6	641	77,348	37,181	40,167	208.0	104.8
	WST TO WST	589	30,237	51.3	834	334,279	217,957	116,322	153.4	125.7
	OFF TO SOU	86	4,228	49.2	735	61,684	36,356	25,328	169.7	141.2
	SOU TO OFF	73	2,972	40.7	772	62,741	36,711	26,030	173.0	181.4
	OFF TO WST	142	6,857	48.3	1,170	156,686	96,342	60,344	162.6	134.9
	WST TO OFF	138	5,960	43.2	1,401	148,912	101,467	47,445	146.8	121.6
	SOU TO WST	36	1,497	41.6	1,084	49,790	19,181	30,609	259.6	216.9
	WST TO SOU	149	10,082	67.7	818	108,680	67,423	41,257	161.2	120.3
29100	PRODUCTS OF PETROLEUM REFINING									
	US TO US	5,084	229,460	45.1	480	1,918,933	1,673,739	245,194	114.6	97.7
	OFF TO OFF	1,331	57,099	42.9	237	323,847	304,846	19,001	106.2	92.8
	SOU TO SOU	621	26,769	43.1	291	131,199	108,270	22,929	121.2	103.8
	WST TO WST	2,481	114,789	46.3	929	992,888	871,860	121,028	113.9	96.5
	OFF TO SOU	91	4,361	47.9	842	53,172	39,516	13,656	134.6	113.0
	SOU TO OFF	40	1,977	49.4	761	24,498	18,873	5,625	129.8	109.7
	OFF TO WST	62	2,407	38.8	1,069	63,636	52,402	11,234	121.4	103.0
	WST TO OFF	220	10,233	46.4	1,222	187,810	167,616	20,194	112.1	96.7
	SOU TO WST	7	324	46.3	386	3,108	2,554	554	121.7	104.0
	WST TO SOU	211	10,931	51.8	836	138,695	107,770	30,925	128.7	107.8
29111	GSLNE, JET, OTH HIGH VOLA PETRO FUELS EXC NAT GSLN									
	US TO US	637	23,723	37.2	179	88,139	99,402	11,263DEF	88.7	78.2
	OFF TO OFF	98	3,343	34.1	182	10,521	16,326	5,805DEF	64.4	55.3
	SOU TO SOU	240	8,047	33.5	92	20,445	22,362	1,917DEF	91.4	82.0
	WST TO WST	294	12,118	41.2	237	52,636	57,391	4,755DEF	91.7	79.6
29117	RESIDUAL FUEL OIL & OTH LOW VOLA PETRO FUELS									
	US TO US	1,086	44,220	40.7	337	309,048	298,164	10,884	103.7	90.3
	OFF TO OFF	552	22,367	40.5	156	93,210	100,730	7,520DEF	92.5	82.1
	SOU TO SOU	82	3,099	37.8	162	11,962	10,816	1,146	110.6	98.8
	WST TO WST	357	14,837	41.6	470	121,692	114,399	7,293	106.4	91.7
	OFF TO SOU	19	833	43.8	1,065	11,296	8,767	2,529	128.8	110.2
	OFF TO WST	25	887	35.5	1,678	22,185	21,386	799	103.7	90.3
	WST TO OFF	45	1,963	43.6	1,217	39,783	34,840	4,943	114.2	97.7
	WST TO SOU	8	372	46.5	1,126	7,823	5,577	2,246	140.3	120.3
29121	LIQUEFIED PETROLEUM AND COAL GASES									
	US TO US	1,050	67,889	64.6	611	612,625	466,859	145,766	131.2	107.5
	OFF TO OFF	139	8,019	57.7	420	66,647	49,276	17,371	135.3	113.1
	SOU TO SOU	123	8,482	69.0	514	58,924	42,641	16,283	138.2	118.2
	WST TO WST	599	38,671	64.3	583	345,146	258,398	86,748	133.5	109.2
	OFF TO SOU	26	1,734	66.7	804	11,789	8,201	3,588	143.8	110.9
	SOU TO OFF	15	1,024	68.3	843	11,813	8,953	2,860	131.9	107.6
	WST TO OFF	32	2,666	83.3	1,226	54,098	45,755	8,343	118.2	96.5
	WST TO SOU	96	6,653	69.3	821	64,188	53,437	10,751	120.1	97.3
29500	PAVING AND ROOFING MATERIALS									
	US TO US	457	20,634	45.2	420	160,669	116,258	44,411	138.2	119.2
	OFF TO OFF	120	5,224	43.5	337	37,987	33,124	4,863	114.7	99.1
	SOU TO SOU	149	6,904	46.3	332	39,194	26,682	12,512	146.9	123.0
	WST TO WST	143	6,431	45.1	493	61,288	40,112	21,176	152.8	126.8
	OFF TO SOU	16	683	42.7	949	6,663	4,887	1,776	136.3	114.9
	SOU TO OFF	6	253	42.2	885	3,435	2,651	784	129.6	108.5
	OFF TO WST	6	264	44.0	922	3,792	2,677	1,115	141.7	113.4
	WST TO SOU	16	813	50.8	892	7,752	5,612	2,140	138.1	112.4
29900	MISCELLANEOUS PETROLEUM AND COAL PRODUCTS *									
	US TO US	792	49,264	62.2	431	298,196	251,680	46,516	118.5	99.7
	OFF TO OFF	181	10,994	60.7	298	64,349	43,887	20,462	146.6	119.8
	SOU TO SOU	40	3,264	81.6	194	9,799	6,903	2,896	141.9	113.2
	WST TO WST	512	31,853	62.2	427	160,935	150,291	10,644	107.1	88.9
	OFF TO SOU	11	821	74.6	654	8,383	6,738	1,645	124.4	100.3
	SOU TO OFF	18	849	47.2	1,062	14,791	11,213	3,578	131.9	111.3
	OFF TO WST	15	731	48.7	1,039	19,973	13,139	6,834	152.0	128.6
	WST TO OFF	9	617	68.6	1,088	4,352	3,941	411	110.4	83.7
	WST TO SOU	11	537	48.8	763	6,392	4,346	2,046	144.8	119.7

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(%) OF REV. TO VARIABLE COST (10)	RATIO(%) OF REV. TO FULLY ALLOCA-TED COST (11)
29913	PETROLEUM COKE									
	US TO US	532	36,869	69.3	389	151,245	147,262	3,983	102.7	81.4
	OFF TO OFF	116	7,743	66.8	248	32,276	22,529	9,747	143.3	113.2
	SOU TO SOU	33	2,902	87.9	171	6,422	5,036	1,386	127.5	101.4
	WST TO WST	359	24,508	68.3	418	96,721	106,152	9,431DEF	91.1	72.3
	OFF TO SOU	7	547	78.1	739	4,553	3,243	1,310	140.4	108.3
	WST TO OFF	7	539	77.0	1,096	4,865	4,563	302	106.6	81.0
	WST TO SOU	5	276	55.2	780	1,878	2,115	237DEF	88.8	72.1
30100	TIRES AND INNER TUBES *									
	US TO US	1,055	19,241	18.2	773	465,411	334,825	130,586	139.0	123.4
	OFF TO OFF	287	5,159	18.0	302	72,629	62,051	10,578	117.0	108.8
	SOU TO SOU	54	1,081	20.0	340	14,747	9,331	5,416	158.0	143.2
	WST TO WST	279	4,769	17.1	734	114,322	79,518	34,804	143.7	129.4
	OFF TO SOU	57	1,215	21.3	771	26,165	18,503	7,662	141.4	126.4
	SOU TO OFF	109	2,075	19.0	767	51,814	35,612	16,202	145.5	131.7
	OFF TO WST	99	1,762	17.8	1,039	77,143	57,330	19,813	134.6	119.9
	WST TO OFF	87	1,668	19.2	1,110	53,602	38,622	14,980	138.8	124.2
	SOU TO WST	63	1,149	18.2	1,361	42,355	25,525	16,830	165.9	146.3
	WST TO SOU	20	363	18.1	1,332	12,432	8,133	4,299	152.9	135.4
30111	PNEUMATIC TIRES									
	US TO US	1,040	18,937	18.2	769	455,440	328,749	126,691	138.5	123.0
	OFF TO OFF	283	5,124	18.1	302	72,034	61,604	10,430	116.9	108.7
	SOU TO SOU	53	1,040	19.6	340	14,233	9,133	5,100	155.8	143.4
	WST TO WST	272	4,628	17.0	738	108,592	76,381	32,211	142.2	128.1
	OFF TO SOU	55	1,183	21.5	770	25,317	17,848	7,469	141.8	126.7
	SOU TO OFF	109	2,075	19.0	767	51,814	35,612	16,202	145.5	131.7
	OFF TO WST	97	1,718	17.7	1,056	75,218	55,984	19,234	134.4	119.7
	WST TO OFF	87	1,668	19.2	1,110	53,602	38,622	14,980	138.8	124.2
	SOU TO WST	63	1,149	18.2	1,361	42,355	25,525	16,830	165.9	146.5
	WST TO SOU	19	345	18.2	1,366	11,975	7,840	4,135	152.7	135.2
30600	MISCELLANEOUS FABRICATED RUBBER PRODUCTS *									
	US TO US	136	1,947	14.3	1,136	68,183	51,573	16,610	132.2	120.1
	OFF TO OFF	33	442	13.4	314	7,476	7,383	93	101.3	93.9
	SOU TO SOU	13	95	7.3	134	1,416	1,175	241	120.5	110.9
	WST TO WST	21	379	18.0	1,621	10,991	7,637	3,354	143.9	128.5
	OFF TO SOU	16	217	13.6	960	7,814	6,019	1,795	129.8	120.3
	SOU TO OFF	12	154	12.8	734	4,956	3,613	1,343	137.2	127.7
	OFF TO WST	24	357	14.9	2,354	23,731	16,462	7,269	144.2	128.6
	SOU TO WST	13	223	17.2	1,721	9,238	6,834	2,404	135.2	120.7
30700	MISCELLANEOUS PLASTIC PRODUCTS *									
	US TO US	840	10,349	12.3	934	368,205	281,140	87,065	131.0	120.7
	OFF TO OFF	376	4,260	11.3	483	108,414	98,588	9,826	110.0	104.0
	SOU TO SOU	48	546	11.4	340	10,898	7,100	3,798	153.5	143.0
	WST TO WST	161	2,158	13.4	1,003	61,841	34,246	27,595	180.6	137.2
	OFF TO SOU	33	396	12.0	732	22,620	19,311	3,309	117.1	109.4
	SOU TO OFF	45	667	14.8	765	17,649	13,377	4,272	131.9	121.4
	OFF TO WST	68	1,312	19.3	2,189	80,899	57,321	23,578	141.1	128.1
	WST TO OFF	25	275	11.0	1,610	17,766	14,197	3,569	125.1	115.6
	SOU TO WST	39	633	16.2	1,260	25,802	15,274	10,528	168.9	151.7
	WST TO SOU	7	82	11.7	735	2,316	1,726	590	134.2	126.4
32100	FLAT GLASS *									
	US TO US	212	8,586	40.5	616	147,717	98,416	49,301	150.1	132.1
	OFF TO OFF	82	3,899	47.5	362	46,629	32,681	13,948	142.7	128.8
	SOU TO SOU	12	426	35.5	378	8,126	4,334	3,792	187.5	167.6
	WST TO WST	49	1,903	38.9	382	26,856	19,839	7,017	135.4	118.7
	OFF TO SOU	24	902	37.6	632	16,328	10,725	5,603	152.2	135.2
	SOU TO OFF	5	196	39.2	652	3,677	2,255	1,422	163.1	145.6
	OFF TO WST	31	936	30.2	1,480	36,107	22,616	13,491	159.7	139.1
	SOU TO WST	5	160	32.0	1,362	5,250	3,204	2,046	163.9	143.0
32200	GLASS & GLASSWARE, PRESSED AND BLOWN									
	US TO US	719	15,387	21.4	647	284,495	233,702	50,793	121.7	109.4
	OFF TO OFF	356	7,569	21.3	354	89,091	87,610	1,481	101.7	93.4
	SOU TO SOU	29	801	27.6	359	8,698	6,411	2,287	135.7	123.6
	WST TO WST	155	3,833	24.7	843	63,624	52,090	11,534	122.1	109.4
	OFF TO SOU	41	827	20.2	834	19,426	14,265	5,161	136.2	122.5
	SOU TO OFF	7	222	31.7	802	3,957	3,047	910	129.9	114.5
	OFF TO WST	101	2,183	21.6	1,499	78,649	56,920	21,729	138.2	121.3
	WST TO OFF	9	234	26.0	1,073	6,368	4,348	2,020	146.5	127.0
	SOU TO WST	15	280	18.7	1,482	10,878	6,433	4,445	169.1	148.4
	WST TO SOU	6	115	19.2	1,328	3,806	2,580	1,226	147.5	130.7

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI- BUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCA- TED COST (11)
32411	CEMENT, HYDLCJ PORTLAND, NAT, MASONRY, PUIZOLAN									
	US TO US	3,224	234,997	72.9	217	881,865	704,679	177,186	125.1	102.0
	OFF TO OFF	1,061	76,020	71.6	136	284,200	236,014	48,186	120.4	101.8
	SOU TO SOU	661	48,746	73.7	248	165,186	121,257	43,929	136.2	109.9
	WST TO WST	1,391	102,628	73.8	226	384,278	308,105	76,173	126.7	101.2
	OFF TO SOU	58	4,254	73.3	373	19,816	17,359	2,457	114.2	92.4
	OFF TO WST	25	1,554	62.2	573	13,136	10,300	2,836	127.5	103.8
	WST TO OFF	8	464	58.0	782	5,280	3,901	1,379	135.3	109.4
	WST TO SOU	14	930	66.4	789	8,164	6,268	1,896	130.2	102.9
32500	STRUCTURAL CLAY PRODUCTS									
	US TO US	1,313	68,997	52.5	529	497,168	434,641	62,527	114.4	96.4
	OFF TO OFF	437	22,813	52.2	462	143,521	136,652	6,869	105.0	88.1
	SOU TO SOU	244	14,887	61.0	309	55,188	48,590	6,598	113.6	93.4
	WST TO WST	267	13,233	49.6	557	103,405	85,483	17,922	121.0	99.2
	OFF TO SOU	48	2,295	47.8	893	21,544	17,123	4,421	125.8	103.1
	SOU TO OFF	117	6,657	56.9	863	50,575	44,480	6,095	113.7	92.6
	OFF TO WST	63	2,653	42.1	1,462	51,634	43,089	8,545	119.8	98.4
	WST TO OFF	89	4,356	48.9	823	45,767	39,637	6,130	115.5	94.0
	SOU TO WST	29	1,321	45.6	933	15,443	12,202	3,241	126.6	103.4
	WST TO SOU	21	1,018	48.5	758	10,091	7,383	2,708	136.7	110.9
32700	CONCRETE, GYPSUM & PLASTER PRODUCTS									
	US TO US	1,756	101,670	57.9	333	623,512	473,120	150,392	131.7	110.4
	OFF TO OFF	635	41,093	64.6	196	180,288	158,668	21,620	113.6	97.1
	SOU TO SOU	221	13,519	61.1	266	83,268	46,958	36,310	177.3	147.2
	WST TO WST	664	33,914	51.1	485	276,987	205,031	71,956	135.1	112.2
	OFF TO SOU	59	3,651	61.9	278	25,122	21,090	4,032	119.1	99.8
	SOU TO OFF	6	317	52.8	806	5,348	2,636	2,712	202.9	166.4
	OFF TO WST	16	670	41.9	872	8,419	7,348	1,071	114.6	95.5
	WST TO OFF	41	1,734	42.3	1,003	25,995	20,563	5,432	126.4	104.0
	WST TO SOU	44	2,616	59.5	383	17,839	11,589	6,250	153.9	127.4
32753	GYPSUM BUILDING MTLS, EXC LATH AND PLASTER									
	US TO US	39	1,633	41.9	648	17,687	13,953	3,734	126.8	106.7
	OFF TO OFF	10	391	39.1	303	3,328	3,021	307	110.2	90.5
	WST TO WST	23	1,002	43.6	741	10,913	8,665	2,248	125.9	104.3
32754	GYPSUM WALLBOARD									
	US TO US	594	29,784	50.1	476	255,928	180,303	75,625	141.9	119.0
	OFF TO OFF	78	3,994	51.2	198	23,779	18,343	5,436	129.6	113.6
	SOU TO SOU	104	5,038	48.4	308	37,383	19,711	17,672	189.7	161.5
	WST TO WST	376	18,935	50.4	336	171,628	127,024	44,604	135.1	112.3
	OFF TO SOU	5	243	48.6	860	2,059	1,306	753	157.7	134.9
	WST TO OFF	13	576	44.3	836	8,123	6,200	1,923	131.0	110.7
	WST TO SOU	16	770	48.1	722	10,425	5,976	4,449	174.4	144.9
32900	ABRASIVES, ASBESTOS, MISC NON METALLIC MNRL PRD									
	US TO US	5,620	322,030	57.3	419	1,994,455	1,582,928	411,527	126.0	103.7
	OFF TO OFF	1,142	62,212	54.5	216	320,455	275,314	45,141	116.4	100.4
	SOU TO SOU	1,813	120,641	66.5	187	283,996	269,161	14,835	105.5	87.1
	WST TO WST	1,396	78,302	56.1	432	504,709	401,699	103,010	125.6	102.7
	OFF TO SOU	146	4,683	32.1	720	50,661	31,225	19,436	162.2	132.6
	SOU TO OFF	519	28,133	54.2	902	354,662	242,291	112,371	146.4	117.7
	OFF TO WST	95	2,477	26.1	1,451	65,080	52,836	12,244	123.2	105.7
	WST TO OFF	166	8,122	48.9	1,351	149,518	119,052	30,466	125.6	100.0
	SOU TO WST	220	13,370	60.8	1,221	184,249	125,450	58,799	146.9	114.3
	WST TO SOU	123	4,090	33.3	967	65,125	45,920	19,205	141.8	119.1
32952	LGT WT AGRGTS, AND CLAYS, EXC DIAT AND INF EARTHS									
	US TO US	2,028	117,893	58.1	514	881,442	627,602	253,840	140.4	113.7
	OFF TO OFF	277	17,359	62.7	138	53,136	55,234	2,098DEF	96.2	82.8
	SOU TO SOU	626	37,407	59.8	217	115,716	94,493	21,223	122.5	101.4
	WST TO WST	468	28,148	60.1	316	210,969	151,596	59,373	139.2	111.7
	OFF TO SOU	7	415	59.3	403	2,310	1,966	344	117.5	96.5
	SOU TO OFF	408	21,566	52.9	886	285,734	185,165	100,569	154.3	124.4
	WST TO OFF	63	3,053	48.5	1,257	59,457	39,419	20,038	150.8	121.8
	SOU TO WST	158	8,993	56.9	1,260	137,728	88,941	48,787	154.9	121.1
	WST TO SOU	17	715	42.1	1,395	14,614	9,205	5,409	158.8	128.5

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCA-TED COST (11)
32999	OTH MINERALS AND EARTHS, GROUND OR OTHERWISE TREATED									
	US TO US	2,153	152,469	70.8	278	511,750	487,834	23,916	104.9	85.2
	OFF TO OFF	483	31,394	64.9	213	139,369	120,132	19,237	116.0	97.9
	SOU TO SOU	1,079	77,619	71.9	139	110,866	132,481	21,615DEF	83.7	70.5
	WST TO WST	413	31,115	75.3	353	127,651	115,439	12,212	110.6	87.6
	OFF TO SOU	25	1,642	65.7	381	13,363	9,636	3,727	138.6	111.0
	SOU TO OFF	53	3,760	70.9	1,087	33,486	33,466	20	100.1	78.1
	OFF TO WST	14	730	52.1	1,388	13,493	12,508	985	107.9	88.2
	WST TO OFF	14	935	66.8	700	8,841	7,013	1,828	126.1	101.6
	SOU TO WST	47	3,453	73.5	1,128	31,797	28,260	3,537	112.5	88.3
	WST TO SOU	25	1,887	75.5	817	13,044	8,899	4,145	146.6	112.9
33100	STEEL WORKS AND ROLLING MILL PRODUCTS									
	US TO US	12,353	706,657	57.2	388	5,336,974	3,603,749	1,733,225	148.1	122.7
	OFF TO OFF	7,896	455,663	57.7	208	2,460,136	1,706,747	753,389	144.1	121.9
	SOU TO SOU	714	41,443	58.0	223	184,095	116,533	67,562	158.0	132.4
	WST TO WST	1,837	103,373	56.3	617	987,494	678,025	309,469	145.6	117.5
	OFF TO SOU	513	25,283	49.3	727	371,732	208,098	163,634	178.6	140.8
	SOU TO OFF	323	18,038	55.8	518	134,487	101,676	32,811	131.9	126.2
	OFF TO WST	862	41,577	48.2	1,573	929,042	601,137	327,905	154.5	125.6
	WST TO OFF	77	4,384	56.9	1,543	60,331	45,149	15,182	133.6	107.0
	SOU TO WST	289	12,756	44.2	1,048	163,401	128,293	35,108	127.4	103.6
	WST TO SOU	40	1,936	48.4	904	26,238	18,091	8,147	145.1	119.7
33113	COKE, SCREENINGS AND BREEZE									
	US TO US	3,520	160,690	45.7	738	761,550	720,935	40,615	105.6	87.0
	OFF TO OFF	2,355	99,323	42.2	194	411,005	347,890	63,115	118.1	99.6
	SOU TO SOU	210	10,280	49.0	220	40,600	33,549	7,051	121.0	104.1
	WST TO WST	373	22,230	59.6	310	167,230	182,636	15,406DEF	91.6	74.0
	OFF TO SOU	15	715	47.7	303	4,483	3,990	493	112.4	92.1
	SOU TO OFF	123	5,775	46.9	383	39,030	37,469	1,561	104.2	85.8
	OFF TO WST	43	2,064	48.0	1,296	26,565	29,292	2,727DEF	90.7	73.6
	WST TO OFF	23	1,523	66.2	833	13,305	12,831	474	103.7	81.3
	SOU TO WST	160	6,935	43.3	1,074	55,200	75,365	20,165DEF	73.2	60.4
	WST TO SOU	10	615	61.5	671	4,110	3,893	217	105.6	86.8
33121	STEEL INGOT AND SEMI FINISHED SHAPES									
	US TO US	2,320	167,717	72.3	363	893,818	658,286	235,532	135.8	110.3
	OFF TO OFF	1,859	134,393	72.3	232	589,167	476,465	112,702	123.7	102.2
	SOU TO SOU	20	1,303	65.2	284	5,231	3,016	2,215	173.4	142.3
	WST TO WST	297	21,890	73.7	390	187,087	113,115	73,972	165.4	129.7
	OFF TO SOU	19	1,396	73.5	638	15,586	7,682	7,904	202.9	158.9
	SOU TO OFF	43	3,321	77.2	324	16,344	11,151	5,193	146.6	117.0
	OFF TO WST	56	3,789	67.7	1,113	64,459	34,173	30,286	188.6	142.8
	WST TO OFF	20	1,177	58.9	715	9,257	8,617	640	107.4	85.9
	WST TO SOU	5	373	74.6	352	4,078	1,658	2,420	246.0	190.6
33123	IRON OR STEEL SHEET AND STRIP, EXCEPT TIN MILL PROD									
	US TO US	1,646	97,676	59.3	362	955,318	521,644	433,674	183.1	154.3
	OFF TO OFF	1,036	68,870	66.5	213	497,105	272,283	224,822	182.6	155.4
	SOU TO SOU	60	3,464	57.7	382	30,869	13,795	17,074	223.8	184.7
	WST TO WST	174	7,827	45.0	865	118,698	67,478	51,220	175.9	148.5
	OFF TO SOU	163	8,036	49.3	707	121,349	66,633	54,716	182.1	151.6
	SOU TO OFF	21	1,281	61.0	349	11,825	5,915	5,910	199.9	167.0
	OFF TO WST	146	7,198	49.3	990	151,056	83,346	67,710	181.2	149.6
	SOU TO WST	24	1,175	49.0	861	22,738	10,839	11,899	209.8	173.6
33124	IRON OR STEEL BARS, BAR SHAPES AND RODS									
	US TO US	1,120	60,967	54.4	371	563,474	322,643	240,831	174.6	146.2
	OFF TO OFF	768	41,755	54.4	206	295,126	173,482	121,644	170.1	146.1
	SOU TO SOU	48	2,924	60.9	231	18,083	7,886	10,197	229.3	189.9
	WST TO WST	138	7,774	56.3	988	88,735	52,478	36,257	169.1	133.2
	OFF TO SOU	67	3,690	55.1	779	59,227	29,025	30,202	204.1	165.5
	SOU TO OFF	16	934	58.4	318	8,515	3,986	4,529	213.6	178.0
	OFF TO WST	73	3,387	46.4	1,249	84,308	50,429	33,879	167.2	139.0
	WST TO OFF	5	352	70.4	1,031	7,012	4,351	2,661	161.2	121.9
33126	STEEL PIPE AND TUBE									
	US TO US	1,310	54,602	41.7	801	899,910	556,036	343,874	161.8	135.5
	OFF TO OFF	473	20,640	43.6	277	187,033	119,826	67,207	156.1	136.1
	SOU TO SOU	33	1,489	45.1	232	9,932	5,359	4,573	185.3	160.6
	WST TO WST	267	10,817	40.5	985	190,363	117,507	72,856	162.0	133.5
	OFF TO SOU	128	4,855	37.9	789	81,473	50,503	30,970	161.3	137.1
	SOU TO OFF	22	679	30.9	639	8,636	7,067	1,569	122.2	106.6
	OFF TO WST	324	13,720	42.3	1,439	363,544	221,747	141,797	163.9	134.9
	WST TO OFF	17	660	38.8	1,404	16,597	11,127	5,470	149.2	124.9
	SOU TO WST	27	1,065	39.4	1,144	28,907	12,791	16,116	226.0	187.0
	WST TO SOU	19	691	36.4	1,287	13,425	10,109	3,316	132.8	111.9

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCATED COST (11)
33200	IRON AND STEEL CASTINGS *									
	US TO US	355	12,018	33.9	496	180,210	115,044	65,166	156.6	134.2
	OFF TO OFF	125	4,492	35.9	216	48,769	31,181	17,588	156.4	130.3
	SOU TO SOU	49	1,991	40.6	446	20,532	12,300	8,232	166.9	143.0
	WST TO WST	52	2,269	43.6	734	28,356	19,490	8,866	145.5	120.9
	OFF TO SOU	5	218	43.6	920	2,069	1,688	381	122.6	103.6
	SOU TO OFF	63	2,579	40.9	882	38,977	23,421	15,556	166.4	143.2
	SOU TO WST	52	1,927	37.1	959	34,994	22,683	12,311	154.3	131.0
33300	NONFERROUS METALS PRIMARY SMELTER PRODUCTS									
	US TO US	1,194	73,589	61.6	1,028	1,087,293	637,357	449,936	170.6	132.8
	OFF TO OFF	261	14,979	57.4	428	136,172	83,760	52,412	162.6	133.6
	SOU TO SOU	49	3,156	64.4	333	24,559	10,131	14,428	242.4	190.4
	WST TO WST	439	28,325	64.5	848	348,840	198,968	149,872	175.3	135.8
	OFF TO SOU	38	1,882	37.0	690	21,561	12,453	9,108	173.1	138.9
	SOU TO OFF	61	3,299	54.1	719	45,906	24,487	21,419	187.5	152.7
	OFF TO WST	19	838	44.1	1,928	21,564	16,165	5,399	133.4	128.1
	WST TO OFF	236	19,327	81.9	1,951	391,104	241,401	149,703	162.0	125.4
	SOU TO WST	9	493	54.8	1,438	12,026	5,815	6,211	206.8	156.6
	WST TO SOU	67	4,219	63.0	1,350	85,331	46,197	39,134	184.7	142.1
33500	NONFERROUS METAL BASIC SHAPES									
	US TO US	672	26,873	40.0	1,087	557,076	359,566	197,510	154.9	129.7
	OFF TO OFF	166	6,967	42.0	475	80,064	58,375	21,689	137.2	118.3
	SOU TO SOU	24	1,175	49.0	476	14,066	6,290	7,776	223.6	187.7
	WST TO WST	172	6,692	38.9	1,090	143,120	85,541	57,579	167.3	139.2
	OFF TO SOU	49	1,858	37.9	740	31,356	19,749	11,607	158.8	134.3
	SOU TO OFF	27	1,137	42.1	697	19,654	10,292	9,362	191.0	161.5
	OFF TO WST	123	3,948	32.1	1,820	142,203	98,261	43,942	144.7	123.2
	WST TO OFF	62	3,497	56.4	1,719	73,353	50,044	23,309	146.6	113.9
	SOU TO WST	32	1,038	32.4	1,676	34,942	19,982	14,960	174.9	147.0
	WST TO SOU	17	363	21.4	1,790	18,236	10,950	7,286	166.5	139.8
33900	MISCELLANEOUS PRIMARY METAL PRODUCTS									
	US TO US	175	8,781	50.2	346	119,616	63,073	56,543	189.6	158.4
	OFF TO OFF	94	3,158	33.6	277	42,590	25,293	17,297	168.4	144.1
	WST TO WST	53	1,687	31.8	822	31,452	13,936	17,516	225.7	181.9
	OFF TO SOU	16	698	43.6	964	12,121	5,889	6,232	205.8	170.2
	OFF TO WST	18	754	41.9	1,377	23,740	11,551	12,189	205.5	168.7
	WST TO OFF	5	189	37.8	1,490	4,645	3,471	1,174	133.8	111.8
34100	METAL CANS **									
	US TO US	387	3,916	10.1	492	165,173	137,653	27,520	120.0	113.7
	OFF TO OFF	218	1,973	9.1	334	46,116	47,629	1,513CR	96.8	93.0
	SOU TO SOU	42	451	10.7	402	10,623	7,384	3,239	143.9	130.9
	WST TO WST	224	2,523	11.3	485	63,907	49,527	14,380	129.0	121.3
	OFF TO SOU	49	448	9.1	843	16,715	12,700	4,015	131.6	124.9
	OFF TO WST	30	317	10.6	1,013	15,607	11,060	4,547	141.1	131.6
	WST TO OFF	11	88	8.0	1,372	6,242	5,327	915	117.2	111.1
	SOU TO WST	6	68	11.3	1,110	3,294	1,992	1,302	165.4	152.0
34300	PLUMBING FXTRS & HEATING APPARATUS, EXC ELECTRIC									
	US TO US	246	3,962	16.1	934	137,732	104,640	33,092	131.6	121.2
	OFF TO OFF	81	1,394	17.2	490	30,647	27,760	2,887	110.4	103.4
	SOU TO SOU	11	182	16.5	439	3,136	2,217	919	141.5	130.9
	WST TO WST	59	881	14.9	1,007	34,927	25,284	9,643	138.1	127.6
	OFF TO SOU	23	283	12.3	752	9,969	7,386	2,583	135.0	126.6
	OFF TO WST	39	662	17.0	1,495	34,925	24,501	10,424	142.5	128.3
	WST TO OFF	9	140	15.6	1,906	6,679	5,150	1,529	129.7	116.0
	SOU TO WST	12	243	20.3	1,429	11,328	7,260	4,068	156.0	139.9
	WST TO SOU	8	101	12.6	1,353	4,796	3,839	957	124.9	113.4
34400	STRUCTURAL METAL PRODUCTS									
	US TO US	1,963	74,402	37.9	497	955,567	637,336	318,231	149.9	130.4
	OFF TO OFF	983	38,732	39.4	236	317,120	236,675	80,445	134.0	119.4
	SOU TO SOU	130	5,396	41.5	336	48,303	27,553	20,750	175.3	133.0
	WST TO WST	408	14,782	36.2	840	219,206	146,807	72,399	149.3	128.7
	OFF TO SOU	188	7,602	40.4	723	121,410	72,271	49,139	168.0	144.5
	SOU TO OFF	33	940	28.5	697	17,779	11,166	6,613	159.2	139.9
	OFF TO WST	126	4,182	33.2	1,426	128,768	80,331	48,437	160.3	136.0
	WST TO OFF	46	1,318	28.7	2,182	62,041	38,432	23,609	161.3	137.6
	SOU TO WST	35	1,166	33.3	1,814	27,236	16,641	10,595	163.7	142.0
	WST TO SOU	13	274	21.1	1,997	13,184	7,280	5,904	181.1	160.6

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969
(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(5) OF REV. TO VARIABLE COST (10)	RATIO(5) OF REV. TO FULLY ALLOCA-TED COST (11)
34411	STRUCTURAL METL PRDS, IRON & STEEL									
	US TO US	1,104	33,290	30.2	489	642,776	435,684	207,092	147.5	137.6
	OFF TO OFF	749	27,970	37.4	218	218,143	171,309	46,834	127.3	114.1
	SOU TO SOU	85	3,467	40.8	292	26,244	16,513	9,731	158.9	139.2
	WST TO WST	273	10,298	37.7	835	144,399	97,002	47,397	148.9	127.4
	OFF TO SOU	140	6,303	45.0	784	93,899	54,855	39,044	171.2	143.6
	SOU TO OFF	19	637	33.5	851	9,534	6,256	3,278	152.4	131.5
	OFF TO WST	71	2,727	38.4	1,469	82,527	48,058	34,469	171.7	142.6
	WST TO OFF	28	1,030	36.8	2,294	45,390	28,189	17,201	160.6	138.7
	SOU TO WST	20	676	33.8	1,097	16,561	10,239	6,322	161.7	129.6
	WST TO SOU	5	178	35.6	1,586	5,861	3,045	2,816	192.5	160.3
34610	METAL STAMPINGS *									
	US TO US	199	4,377	22.0	782	98,220	74,036	24,184	132.6	119.2
	OFF TO OFF	111	1,986	17.9	385	31,375	27,060	4,315	115.9	107.4
	WST TO WST	31	943	30.4	891	15,533	11,253	4,280	138.0	118.7
	OFF TO SOU	10	263	26.3	886	4,865	3,270	1,595	148.8	131.6
	OFF TO WST	35	908	25.9	1,291	31,288	19,962	11,326	156.7	137.2
	WST TO OFF	11	247	22.5	2,128	8,089	8,253	164DEF	98.0	99.2
34960	MISC FABRICATED WIRE PRD, EXC STEEL WIRE *									
	US TO US	161	4,650	28.9	822	95,627	63,699	31,928	150.0	131.1
	OFF TO OFF	25	723	29.0	407	8,942	7,256	1,686	123.2	109.6
	SOU TO SOU	13	409	31.5	277	4,667	3,066	1,601	152.2	141.9
	WST TO WST	72	2,201	30.6	800	41,684	27,188	14,496	153.3	132.4
	OFF TO SOU	15	427	28.5	756	8,797	5,427	3,370	162.1	142.5
	SOU TO OFF	14	240	17.1	899	6,765	4,293	2,472	157.6	165.9
	OFF TO WST	13	400	30.8	2,048	19,523	13,396	6,127	145.7	125.2
34990	MISC FABRICATED METAL PRD									
	US TO US	597	10,568	17.7	885	277,873	201,619	76,254	137.8	123.9
	OFF TO OFF	188	3,123	16.6	389	54,853	46,731	8,122	117.4	109.2
	SOU TO SOU	28	387	13.8	443	9,430	6,884	2,546	137.0	126.8
	WST TO WST	186	2,810	15.1	676	62,585	45,946	16,639	136.2	123.8
	OFF TO SOU	53	1,026	19.3	734	26,916	17,829	9,087	151.0	142.0
	SOU TO OFF	27	564	20.9	867	13,227	9,079	4,148	145.7	132.8
	OFF TO WST	69	1,690	24.5	1,906	70,504	51,135	19,369	137.9	119.3
	WST TO OFF	19	364	19.2	2,252	17,836	11,088	6,748	160.9	140.7
	SOU TO WST	22	429	19.5	1,028	18,514	11,706	6,808	158.2	140.2
35200	FARM MACHINERY AND EQUIPMENT *									
	US TO US	555	9,280	16.7	848	289,220	206,241	82,979	140.2	129.1
	OFF TO OFF	94	1,475	15.7	481	30,346	28,133	2,213	107.9	100.9
	SOU TO SOU	22	426	19.4	463	6,023	3,058	2,965	196.9	166.3
	WST TO WST	252	4,274	17.0	869	138,628	90,330	48,298	153.5	139.7
	OFF TO SOU	59	1,126	19.1	790	31,184	21,642	9,542	144.1	131.7
	OFF TO WST	47	701	14.9	1,256	31,565	24,716	6,849	127.7	117.1
	WST TO OFF	33	525	15.9	1,076	20,900	16,923	3,977	123.5	114.6
	SOU TO WST	17	269	15.8	1,034	10,036	6,777	3,259	148.1	135.8
	WST TO SOU	26	445	17.1	1,200	17,839	11,196	6,643	159.3	144.7
35300	CONSTR, MINING & MATERIALS HANDLING EQUIPMENT									
	US TO US	512	13,519	26.4	924	393,403	221,906	171,497	177.3	150.8
	OFF TO OFF	193	4,761	24.6	543	93,467	66,655	26,812	140.2	127.1
	SOU TO SOU	9	251	27.9	382	3,917	1,911	2,006	205.0	185.0
	WST TO WST	138	3,943	28.6	1,111	127,259	64,880	62,379	196.1	169.9
	OFF TO SOU	73	2,242	30.7	781	56,576	29,470	27,106	192.0	171.1
	OFF TO WST	47	1,167	24.8	1,781	57,703	32,927	24,776	175.1	153.0
	WST TO OFF	22	570	25.9	1,887	23,097	13,863	10,234	170.6	157.3
	SOU TO WST	6	123	20.5	1,962	5,032	2,556	2,476	196.9	172.4
	WST TO SOU	15	409	27.3	1,515	24,408	9,710	14,698	251.3	214.3
35400	METALWORKING MACHINERY AND EQUIPMENT									
	US TO US	310	19,503	62.9	282	168,973	98,921	70,052	170.8	146.4
	OFF TO OFF	269	17,394	64.7	221	122,167	77,934	44,233	156.7	139.1
	WST TO WST	7	244	34.9	1,239	9,163	3,610	5,553	253.8	212.6
	OFF TO SOU	7	259	37.0	819	6,280	2,838	3,442	221.3	188.1
	SOU TO OFF	13	978	75.2	233	9,032	3,837	5,195	235.4	212.7
	OFF TO WST	3	247	82.3	2,007	12,944	6,963	5,981	185.9	158.0

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969
(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(S) OF REV. TO VARIABLE COST (10)	RATIO(S) OF REV. TO FULLY ALLOCA-TED COST (11)
35600	GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT									
	US TO US	78	1,198	15.4	936	57,016	32,907	24,109	173.3	160.2
	OFF TO OFF	30	407	13.6	461	12,712	8,542	4,170	148.8	140.0
	WST TO WST	6	298	26.0	1,176	6,577	4,135	2,442	159.1	140.0
	OFF TO SOU	8	164	20.5	762	4,801	3,239	1,562	148.2	133.9
	OFF TO WST	14	188	12.9	1,789	22,083	8,961	13,122	246.4	227.4
	WST TO OFF	5	58	10.4	2,210	4,848	3,491	1,357	138.9	129.8
35800	SERVICE INDUSTRY MACHINES									
	US TO US	254	3,693	14.5	868	128,557	105,936	22,621	121.4	113.0
	OFF TO OFF	107	1,607	15.0	407	38,570	39,321	751DEF	98.1	92.0
	SOU TO SOU	11	123	11.2	459	2,991	2,245	746	133.2	120.4
	WST TO WST	29	396	13.7	1,042	16,883	10,958	5,925	154.1	141.5
	OFF TO SOU	37	560	15.1	786	17,110	13,744	3,366	124.5	115.9
	OFF TO WST	50	715	14.3	1,211	36,178	29,103	7,075	124.3	113.3
	WST TO OFF	9	122	13.6	1,690	9,675	6,081	3,594	159.1	147.2
	SOU TO WST	5	72	14.4	1,076	3,222	2,128	1,094	151.4	140.3
35900	MISC MACHINERY & PARTS, EXC ELECTRICAL									
	US TO US	110	2,588	23.5	928	92,236	49,529	42,707	186.2	166.7
	OFF TO OFF	43	1,116	26.0	863	23,498	15,181	8,317	154.8	140.7
	WST TO WST	28	655	23.4	1,216	27,333	14,085	13,248	194.1	171.7
	OFF TO SOU	8	182	22.8	707	10,707	2,916	7,791	367.2	332.7
	OFF TO WST	15	362	24.1	1,698	18,341	10,360	7,981	177.0	164.5
	WST TO OFF	5	89	17.8	1,774	6,061	3,468	2,593	174.8	157.8
36300	HOUSEHOLD APPLIANCES									
	US TO US	1,968	21,210	10.8	774	817,015	746,407	70,608	109.5	103.7
	OFF TO OFF	850	8,969	10.6	486	254,335	272,017	17,682DEF	93.5	89.0
	SOU TO SOU	88	865	9.8	506	26,401	20,411	5,990	129.3	122.7
	WST TO WST	310	3,665	11.8	915	121,404	116,831	4,573	103.9	97.2
	OFF TO SOU	201	2,217	11.0	707	78,806	69,027	9,779	114.2	108.6
	SOU TO OFF	38	491	12.9	731	14,856	13,373	1,483	111.1	104.9
	OFF TO WST	377	3,972	10.5	1,361	248,203	200,826	47,377	123.6	116.1
	WST TO OFF	79	828	10.5	1,940	46,886	34,157	12,729	137.3	129.2
	SOU TO WST	21	245	11.7	1,423	12,352	9,867	2,485	125.2	118.3
	WST TO SOU	24	264	11.0	1,193	13,532	9,898	3,634	136.9	128.0
36400	ELECTRIC LIGHTING AND WIRING EQUIPMENT									
	US TO US	196	2,586	13.2	1,069	109,937	81,238	28,699	135.3	125.6
	OFF TO OFF	86	1,075	12.5	329	30,826	26,282	4,544	117.3	110.6
	SOU TO SOU	7	89	12.7	563	2,684	1,638	1,046	163.9	153.1
	WST TO WST	24	364	15.2	1,160	14,713	10,056	4,657	146.3	133.1
	OFF TO SOU	16	220	13.8	566	8,963	5,674	3,289	158.0	147.3
	SOU TO OFF	5	62	12.4	769	2,744	1,934	810	141.9	134.0
	OFF TO WST	35	430	12.3	1,899	33,251	22,181	11,070	149.9	137.8
	WST TO OFF	9	113	12.6	1,198	5,901	4,393	1,508	134.3	125.2
	SOU TO WST	10	164	16.4	1,063	8,469	7,055	1,414	120.0	109.9
36500	RADIO & TV RECEIVING SETS, EXC COMMUNICATION TYPES									
	US TO US	230	3,297	14.3	1,270	161,448	123,556	37,892	130.7	121.2
	OFF TO OFF	49	468	9.6	691	17,777	19,540	1,763DEF	91.0	87.1
	SOU TO SOU	11	156	14.2	479	3,459	3,276	183	105.6	100.8
	WST TO WST	36	580	16.1	1,359	46,360	31,684	14,676	146.3	134.2
	OFF TO SOU	14	162	11.6	789	6,586	5,029	1,557	131.0	124.4
	SOU TO OFF	15	228	15.2	910	8,468	6,998	1,470	121.0	113.6
	OFF TO WST	31	444	14.3	1,680	34,775	20,213	14,562	172.0	158.4
	WST TO OFF	25	397	15.9	1,469	22,388	22,576	188DEF	99.2	91.3
	SOU TO WST	11	222	20.2	1,959	13,726	8,450	5,276	162.4	146.9
	WST TO SOU	8	166	20.8	1,576	7,709	5,590	2,119	137.9	128.1
37100	MOTOR VEHICLES AND MOTOR VEHICLE EQUIPMENT									
	US TO US	9,771	213,978	21.9	772	6,334,768	4,502,393	1,832,375	140.7	129.1
	OFF TO OFF	4,792	104,061	21.7	411	1,996,667	1,554,187	442,480	128.5	119.2
	SOU TO SOU	209	4,424	21.2	498	89,234	69,968	19,266	127.5	119.8
	WST TO WST	1,469	30,039	20.5	937	1,161,381	836,450	324,931	138.8	128.0
	OFF TO SOU	1,084	24,932	23.0	775	745,008	496,133	248,875	150.2	137.9
	SOU TO OFF	145	3,376	23.3	686	83,202	61,093	22,109	136.2	125.6
	OFF TO WST	1,835	42,428	23.1	1,730	2,079,350	1,361,193	718,157	152.8	137.3
	WST TO OFF	67	1,237	18.5	1,088	55,797	40,030	15,767	139.4	129.9
	SOU TO WST	82	1,520	18.5	1,242	72,034	47,287	24,747	152.3	140.4
	WST TO SOU	68	1,471	21.6	852	51,932	36,084	15,848	143.9	133.9

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRIBUTION (DOLLARS) (9)	RATIO(%) OF REV. TO VARIABLE COST (10)	RATIO(%) OF REV. TO FULLY ALLOCATED COST (11)
37111	PASSENGER CARS, ASSEMBLED									
	US TO US	3,120	70,746	22.7	863	2,479,206	1,779,443	699,763	139.3	128.9
	OFF TO OFF	886	20,010	22.6	347	465,364	405,536	59,828	114.8	107.1
	SOU TO SOU	151	3,370	22.3	213	70,693	55,501	15,192	127.4	119.7
	WST TO WST	875	19,260	22.0	947	736,502	539,202	197,300	136.6	126.7
	OFF TO SOU	506	11,878	23.5	808	384,832	264,618	120,214	145.4	134.5
	SOU TO OFF	87	1,963	22.6	898	57,381	41,953	15,428	136.8	127.3
	OFF TO WST	478	11,288	23.6	1,434	646,381	393,499	252,882	164.3	149.8
	WST TO OFF	35	668	19.1	902	29,705	20,660	9,045	143.8	134.4
	SOU TO WST	46	1,029	22.4	1,019	43,163	27,622	15,541	156.3	144.6
	WST TO SOU	56	1,280	22.9	866	45,185	30,852	14,333	146.5	136.0
37121	PASSENGER MOTOR CAR BODIES									
	US TO US	69	1,512	21.9	713	39,176	25,764	13,412	152.1	137.4
	OFF TO OFF	43	943	21.9	244	14,301	10,436	3,865	137.0	128.1
	OFF TO WST	17	412	24.2	1,819	21,353	12,713	8,640	168.0	147.2
37147	MOTOR VEHICLE BODY PARTS									
	US TO US	1,627	28,844	17.7	902	750,562	572,213	178,349	131.2	121.5
	OFF TO OFF	1,164	20,746	17.8	339	401,746	317,100	84,646	126.7	118.9
	WST TO WST	58	838	14.6	923	33,395	22,109	11,286	151.0	138.7
	OFF TO SOU	86	1,629	18.9	701	46,949	30,819	16,130	152.3	140.1
	SOU TO OFF	11	189	17.2	878	5,366	4,446	920	120.7	111.1
	OFF TO WST	293	5,250	17.9	1,333	255,318	191,761	63,557	133.1	120.9
	SOU TO WST	9	95	10.6	1,340	5,038	4,016	1,022	125.4	117.4
37149	MOTOR VEHICLE ACCESSORIES OR PARTS,NEC									
	US TO US	2,962	64,080	21.7	746	1,711,748	1,220,068	491,680	140.3	127.4
	OFF TO OFF	1,869	40,362	21.6	390	742,781	552,986	189,795	134.3	124.1
	SOU TO SOU	10	167	16.7	296	2,670	1,832	838	145.7	137.3
	WST TO WST	121	2,292	18.9	1,317	88,743	63,372	25,371	140.0	126.0
	OFF TO SOU	254	5,820	22.9	765	158,800	96,480	62,320	164.6	148.9
	SOU TO OFF	28	413	14.8	323	8,838	7,751	1,087	114.0	106.9
	OFF TO WST	674	15,159	22.5	1,393	685,865	480,796	205,069	142.7	127.2
	WST TO OFF	10	249	24.9	1,342	11,455	7,830	3,625	146.3	130.6
	SOU TO WST	15	202	13.5	1,963	12,443	8,964	3,479	138.8	127.4
37400	RAILROAD EQUIPMENT									
	US TO US	761	26,267	34.5	420	271,442	142,834	128,608	190.0	157.1
	OFF TO OFF	494	17,120	34.7	269	128,940	77,258	51,682	166.9	141.0
	SOU TO SOU	29	1,043	36.0	229	6,207	3,313	2,894	187.4	161.1
	WST TO WST	102	3,464	34.0	327	43,181	19,423	23,758	222.3	179.3
	OFF TO SOU	45	1,589	35.3	318	16,771	9,693	7,078	173.0	144.4
	SOU TO OFF	13	456	35.1	381	8,198	2,678	5,520	306.1	247.5
	OFF TO WST	63	2,150	34.1	1,343	56,858	26,158	30,700	217.4	171.5
	WST TO OFF	11	383	34.8	833	8,831	2,941	5,890	300.3	234.2
	SOU TO WST	5	110	22.0	914	2,260	1,122	1,138	201.4	169.2
39400	TOYS, AMUSEMENT, SPORTING AND ATHLETIC GOODS									
	US TO US	233	2,625	11.3	1,301	133,823	99,383	34,440	134.7	124.6
	OFF TO OFF	92	877	9.5	367	29,271	25,571	3,700	114.5	108.7
	SOU TO SOU	6	78	13.0	635	2,060	1,314	746	156.8	143.7
	WST TO WST	28	388	13.9	1,346	24,514	16,648	7,866	147.2	133.3
	OFF TO SOU	14	112	8.0	963	4,360	3,023	1,337	144.2	120.7
	SOU TO OFF	11	97	8.8	870	4,429	3,366	1,063	131.6	124.4
	OFF TO WST	36	412	11.4	2,108	30,265	23,379	6,886	129.5	117.9
	WST TO OFF	17	234	13.8	2,291	17,796	12,538	5,258	141.9	128.9
	SOU TO WST	17	208	12.2	1,951	15,037	8,595	6,442	175.0	159.0
	WST TO SOU	5	49	9.8	2,314	4,071	2,729	1,342	149.2	137.6
40200	WASTE AND SCRAP, EXCEPT ASHES									
	US TO US	8,291	407,643	49.2	207	2,146,421	1,704,188	442,233	126.0	109.0
	OFF TO OFF	5,065	258,165	50.8	127	1,153,281	959,180	194,101	120.2	106.1
	SOU TO SOU	877	40,427	46.1	191	189,839	120,960	68,879	156.9	133.2
	WST TO WST	1,780	87,758	49.3	276	473,287	385,762	87,525	122.7	103.8
	OFF TO SOU	127	6,304	49.6	344	66,674	40,333	26,341	165.3	137.0
	SOU TO OFF	202	6,336	31.4	684	81,858	64,955	16,903	126.0	106.8
	OFF TO WST	76	3,316	43.6	1,306	61,231	47,151	14,080	129.9	106.4
	WST TO OFF	98	3,837	39.2	1,530	92,444	65,383	27,061	141.4	110.2
	SOU TO WST	31	836	27.0	1,101	17,821	14,086	3,735	126.5	110.9
	WST TO SOU	17	726	42.7	884	9,984	6,376	3,608	156.6	127.9

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI-BUTION (DOLLARS) (9)	RATIO(8) OF REV. TO VARIABLE COST (10)	RATIO(8) OF REV. TO FULLY ALLOCA-TED COST (11)
40211	IRON AND STEEL SCRAP, WASTES AND TAILINGS									
	US TO US	3,470	290,600	34.6	150	1,344,260	1,021,576	322,684	131.6	114.0
	OFF TO OFF	3,773	209,420	55.5	160	870,973	682,726	188,251	127.6	112.0
	SOU TO SOU	680	23,955	34.5	166	113,865	64,173	49,692	177.4	130.9
	WST TO WST	1,095	34,690	31.6	219	267,210	217,312	49,898	123.0	109.6
	OFF TO SOU	50	3,315	66.3	393	29,633	13,493	16,140	219.6	176.4
	SOU TO OFF	10	410	41.0	239	3,035	1,810	1,225	167.7	140.0
	OFF TO WST	33	1,810	54.7	1,277	32,850	23,244	9,606	141.3	114.1
	WST TO OFF	20	995	49.8	1,583	22,225	16,018	6,207	138.8	112.5
	SOU TO WST	5	145	29.0	1,472	4,445	2,800	1,645	158.8	130.0
40241	PAPER WASTE AND SCRAP									
	US TO US	1,148	39,136	34.1	364	284,480	255,888	28,592	111.2	96.6
	OFF TO OFF	572	18,042	31.5	236	117,836	118,536	700DEF	99.3	89.0
	SOU TO SOU	162	6,141	37.9	268	31,659	24,336	7,323	130.1	112.3
	WST TO WST	285	9,928	34.8	462	79,062	66,313	12,749	119.2	100.9
	OFF TO SOU	28	1,028	36.7	610	9,983	8,602	1,381	116.1	98.8
	SOU TO OFF	57	2,277	39.9	670	23,039	19,463	3,576	118.4	99.8
	OFF TO WST	10	426	42.6	670	4,602	3,705	897	124.2	102.6
	WST TO OFF	25	940	37.6	1,103	14,597	12,059	2,538	121.0	99.9
	SOU TO WST	7	258	36.9	729	2,746	2,089	657	131.5	109.2
41100	MISC FREIGHT SHIPMENTS *									
	US TO US	315	3,432	10.9	991	192,997	131,626	61,371	146.6	132.5
	OFF TO OFF	98	1,982	20.2	338	32,810	31,242	1,568	105.0	96.3
	SOU TO SOU	15	270	18.0	389	4,061	3,074	987	132.1	122.9
	WST TO WST	100	1,923	19.2	1,015	68,662	41,246	27,416	166.5	149.8
	OFF TO SOU	10	187	18.7	796	4,377	3,577	800	122.4	111.7
	SOU TO OFF	23	301	13.1	863	8,502	8,000	502	106.3	99.0
	OFF TO WST	22	415	18.9	1,996	27,866	16,830	11,036	165.6	148.5
	WST TO OFF	24	512	21.3	1,889	26,010	16,186	9,824	160.7	140.7
	SOU TO WST	11	161	14.6	1,898	7,476	4,590	2,886	162.8	150.3
	WST TO SOU	12	201	16.8	1,994	13,235	6,861	6,374	192.9	171.6
42100	CONTAINERS, SHIPPING, RTD EMPTY INC CARR OR GVC *									
	US TO US	466	7,279	15.6	827	99,192	131,848	32,656DEF	75.2	69.2
	OFF TO OFF	127	2,109	16.6	536	28,344	37,546	9,202DEF	75.5	69.7
	SOU TO SOU	23	425	18.5	393	4,188	4,561	373DEF	91.8	84.9
	WST TO WST	245	3,770	15.4	481	48,731	70,633	21,902DEF	69.0	63.3
	OFF TO SOU	7	97	13.9	397	1,896	1,757	139	107.9	99.9
	SOU TO OFF	37	549	14.8	715	8,536	10,929	2,393DEF	78.1	72.0
	OFF TO WST	5	92	18.4	946	2,779	2,041	738	136.2	123.1
	SOU TO WST	12	176	14.7	823	2,936	3,134	198DEF	93.7	86.7
42200	TRAILERS, SEMI TRAILERS, RTD EMPTY **									
	US TO US	185	1,686	9.1	602	26,591	67,483	40,892DEF	39.4	35.9
	OFF TO OFF	69	543	7.9	448	6,984	21,272	14,288DEF	32.8	31.6
	SOU TO SOU	12	214	17.8	382	2,679	2,923	244DEF	91.7	86.5
	WST TO WST	96	829	8.6	767	15,204	40,787	25,583DEF	37.3	34.0
44111	FREIGHT FORWARDER TRAFFIC									
	US TO US	2,344	45,330	19.3	1,452	1,362,969	1,415,165	52,196DEF	96.3	87.1
	OFF TO OFF	582	10,186	17.5	781	216,268	255,657	39,389DEF	84.6	78.4
	SOU TO SOU	125	3,022	24.2	407	29,786	38,398	8,612DEF	77.6	72.7
	WST TO WST	947	17,063	18.0	1,237	550,082	568,922	18,840DEF	96.7	87.6
	OFF TO SOU	153	4,990	32.6	999	91,443	87,008	4,435	105.1	93.3
	SOU TO OFF	21	525	25.0	858	7,619	9,488	1,869DEF	80.3	72.6
	OFF TO WST	243	4,670	19.2	2,742	233,609	235,918	2,309DEF	99.0	87.9
	WST TO OFF	27	436	16.1	2,570	23,440	27,010	3,570DEF	86.8	79.3
	SOU TO WST	241	4,328	18.0	2,491	204,976	187,359	17,617	109.4	97.6
	WST TO SOU	5	126	25.2	2,375	5,746	5,399	347	106.4	95.7
45111	SHIPPER ASSOCIATION OR SIMILAR TRAFFIC									
	US TO US	1,725	34,623	20.1	1,211	942,192	968,380	26,188DEF	97.3	88.3
	OFF TO OFF	555	10,511	18.9	772	190,931	239,198	48,267DEF	79.8	73.5
	SOU TO SOU	36	720	20.0	491	11,289	10,217	1,072	110.5	102.1
	WST TO WST	597	12,511	20.9	1,413	360,556	365,467	4,911DEF	98.7	89.0
	OFF TO SOU	146	4,156	28.5	766	72,908	65,011	7,897	112.1	101.0
	SOU TO OFF	69	1,702	24.7	905	29,751	32,869	3,118DEF	90.5	82.8
	OFF TO WST	269	4,379	16.3	2,240	234,198	216,355	17,843	108.2	97.9
	WST TO OFF	12	281	23.4	2,167	12,449	12,112	337	102.8	92.2
	SOU TO WST	36	601	16.7	1,671	24,374	22,698	1,676	107.4	98.2
	WST TO SOU	5	162	32.4	1,988	5,736	4,453	1,283	128.8	112.2

REVENUE CONTRIBUTION TO BURDEN AND OTHER DATA, BY COMMODITY CLASSES AND TERRITORIAL MOVEMENTS, 1969

(SOURCE OF TRAFFIC DATA: ONE-PERCENT WAYBILL SAMPLE)

STCC (1)	COMMODITY BY TERRITORIAL MOVEMENT (2)	CARLOADS (3)	TONS (4)	AVG. LOAD PER CAR (TONS) (5)	AVG. HAUL PER TON (MILES) (6)	REVENUE (DOLLARS) (7)	VARIABLE COST (DOLLARS) (8)	CONTRI- BUTION (DOLLARS) (9)	RATIO(8) OF REV. TO VARIABLE COST (10)	RATIO(8) OF REV. TO FULLY ALLOCA- TED COST (11)
40111	ALL FRT RATE SHPMT; NEC, INC TOFC IF CMDY UNKNOWN									
	US TO US	3,516	79,419	22.6	812	1,301,983	1,536,238	234,255DEF	84.7	70.2
	OFF TO OFF	1,867	37,408	20.0	891	490,987	760,571	269,584DEF	64.6	55.4
	SOU TO SOU	351	9,926	28.3	488	106,654	106,745	91DEF	99.9	91.3
	WST TO WST	721	16,317	22.6	1,037	359,855	380,469	20,614DEF	94.6	85.7
	OFF TO SOU	256	7,447	29.1	798	123,731	113,257	10,476	109.2	97.7
	SOU TO OFF	120	2,787	23.2	714	40,766	49,394	8,628DEF	82.5	73.6
	OFF TO WST	116	3,384	29.2	1,868	104,633	83,642	20,991	125.1	109.3
	WST TO OFF	44	966	22.0	1,757	42,389	36,393	5,996	116.5	104.1
	SOU TO WST	57	1,643	28.8	1,111	27,899	21,340	6,559	130.7	117.2

EX PARTE NO. 271

NET INVESTMENT—RAILROAD RATE BASE & RATE OF RETURN

Decided January 30, 1974

Representations and verified statements of record discussed and nature of future course of the proceeding determined.

Appearances as shown in prior report, 340 I.C.C. 829, and, in addition, *John W. Barnum, Leonard A. Salters,* and *John W. Snow* for Federal departments and agencies; *John S. Hoff* for an individual shipper; and *Leonard S. Goodman,* Special Projects Counsel to the Commission.

REPORT OF THE COORDINATOR

HARDIN, *Commissioner:*

This proceeding, as noted in the prior report, *Net Investment—Railroad Rate Base & Rate of Return,* 340 I.C.C. 829, was initially instituted to investigate the validity of the current method of determining the rate base for measuring the railroad's rate of return and was subsequently expanded to include a determination as to what constitutes a fair rate of return on the selected base.

Although 70 parties initially filed statements of intent to participate in the proceeding, *supra,* 831, only 19 parties filed statements of position, 10 parties filed verified statements, and 4 parties filed reply verified statements. The parties filing intent to participate statements are listed in the appendix to the prior report. The parties filing statements of position, verified statements, and reply verified statements are listed in appendix A to this report.[1]

The primary purpose of this report is to inform the parties of the direction the proceeding will now take. Therefore, it is not necessary to discuss in detail the matters of record or set forth tentative conclusions based on the record as it now exists. A limited discussion of the record, however, is appropriate.

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[1] The due dates for filing statements expired prior to the appointment of the Special Projects Counsel and, hence, the Special Projects Counsel is not listed in the appendix.

The views expressed thus far by the parties in this proceeding cover a myriad of subjects. Some of the matters discussed, as indicated by the notice served in Ex Parte No. 270 (Sub-No. 3), Investigation of Railroad Freight Rate Structure—Uneven Effects of General Increases on Individual Railroads, reproduced as appendix B to this report, appear to have little, if any, direct relationship to the dual aspect of this proceeding. On the other hand, other representations have a direct relationship to either the rate base or rate of return issues.

At the outset, in order to clear up any misunderstandings that may exist, the Coordinator unequivocally states that this proceeding was not instituted to provide the railroad industry with some sort of guaranteed level of earnings to be established forthwith. As stated by respondents, such a determination in this proceeding would be "futile." Rather, this proceeding was instituted because of the persistence of suspicion that the rate base, used for statistical purposes when computing rate of return in railroad general increase proceedings, was overstated.

It is hoped that this proceeding will upon its conclusion result in general agreement as to the validity of the selected rate base to be announced in this proceeding. Once doubts are resolved with respect to the rate base, an appropriate rate of return can be determined. However, once a rate of return can be found to be reasonable, necessary, or desirable, it would not be automatically applied by the Commission when considering whether or not to sanction proposed increases or decreases in rates. Regardless of how logical and justifiable a given rate of return may be when applied to a rate base, the many specific provisions of the Interstate Commerce Act, in particular sections 1, 2, 3, and 4 of the act, continue to take precedence over a rate of return concept. The Commission has not indicated any intention of disregarding those provisions of the act designed to protect the shippers and promote the commerce of the United States in its search for methods to insure a healthy carrier system.

While this proceeding will not result in the establishment of an automatic formula to be applied without thought, the proceeding is not to be viewed merely as an intellectual exercise. Concrete results will materialize as a direct outgrowth of the proceeding. A study of the rate base cannot fail to produce a better understanding of the facilities necessary now and in the future in order for the railroad industry to respond to the growing demand for efficient and ecologically desirable service. A study of the rate of return issue will provide the Commission with information which, along with other data, is necessary for a proper understanding of railroads' revenue needs.

The respondents in general endorse the present use by the Commission of net investment, constructed in accordance with Commission prescribed accounting procedures, as the rate base. Their reservation is apparently limited to the fact that the Commission will not permit the net investment rate base to reflect the balances in Account 80, "Other Elements of Investment," and Account 90, "Construction Work in Progress."[2] The propriety of reliance on net investment as presently constructed will be further explored as this proceeding progresses. Further, it would appear that the propriety of "betterment accounting" for track, ties, ballast, and other materials associated with track maintenance, last explored by the Commission in 1959, *Uniform System of Accounts for Railroad Companies*, 309 I.C.C. 289, should be further considered in this proceeding. A similar accounting matter, relating to anticipated track retirements and having a relation to this proceeding, is specifically under consideration in docket No. 32153 (Sub-No. 2), Accounting for Retirement of, or Recognition of, Impairments in Value of Track Structures.

One party to the proceeding[3] advocates the use of replacement costs instead of historical costs in computing the investment base on which to base a rate of return. Respondents, although stating they do not oppose the use of replacement costs clearly prefer the net investment concept. Further, while stating they "were not opposed to the use of replacement costs," respondents as well as other parties to the proceeding failed to produce competent evidence in support of this concept. While further consideration of this matter, as the proceeding progresses, will not be ruled out, there is nothing now of record which in the Coordinator's opinion would warrant such a radical departure from present practice.

With slight variations, a number of shipper groups have proposed that property included in the rate base should be limited to that which is actually used and useful in providing transportation and this used and useful transportation property should be valued at the actual consideration paid less depreciation or, if lower, should be valued at the original cost of the property to the carrier first dedicating its use to public service. It is the view of the Department of Transportation (DOT) that the cost to be considered should not be limited to the cost of obtaining labor and capital goods used and useful in transportation but should also include external and social costs such as the cost of maintaining the environment and of advancing safety and health. These issues will most certainly be further considered in this proceeding. However, it will not, as respondents fear, be considered with a view merely to scale down the net investment base. Although there may now be included in the net investment account obsolete facilities which should be excluded from the rate base, it is to be noted that the net investment account has not been stagnant. Since 1929, there has been a reduction of over 20 percent in the miles of railways. There were 249,433 miles of railway owned by all classes of railroads in 1929, compared with a network of 204,696 miles of railway on January 1, 1972. A further reduction of another 20,000 miles of railway would reduce the total railroad net investment figure by $800 million. This projected $800 million dollar figure is about double the almost $400 million the affected railroads were able to utilize to write down their investment in intercity passenger facilities in 1971, as the result of the commencement of Amtrak operations.

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[2] For a further discussion of Account 80 and Account 90, see *Increased Freight Rates, 1968*, 332 I.C.C. 590, 604-607, cited with approval, *Increased Freight Rates, 1970 and 1971*, 339 I.C.C. 125, 164.

[3] Actually joint representation of the Waterways Freight Bureau and Water Transport Association.

The respondents stress the fact that the railroad network, composed of individual companies, is interconnected. Hence, they argue that the Commission in this proceeding should be concerned with an industrywide rate base and rate of return. With equal vigor a number of parties to the proceeding suggest that the rate of return on the selected base must be made applicable to each individual line and that a single industrywide figure would be divorced from reality. This issue too will be further considered as the proceeding progresses towards its conclusion.

While, as stated, the issue of whether the Commission in this proceeding should formulate an industrywide rate base and rate of return will be further considered, it should be noted, and respondents frankly admit, that if industrywide freight rates were to be based at a given time on the financial needs of the weaker railroads, located primarily in the Northeast, the stronger railroads would realize excessive earnings. However, if the rate structure were to be based on the financial needs of the financially stronger railroads located for the most part in the South and the West, the weaker railroads would be denied the opportunity to earn a fair return and would face an even longer period of financial uncertainty. This issue will, therefore, also be considered in the subnumbered proceeding designed to consider the dichotomy that exists in the railroad industry between weak and strong railroads, Ex Parte No. 270 (Sub-No. 3), Investigation of Railroad Freight Rate Structure—Uneven Effects of General Increases on Individual Railroads.[4]

DOT suggests that the Commission utilize a projected funds flow analysis as the appropriate method for determining the railroad industry's level of revenue needs.[5] A funds flow analysis coupled with a productivity analysis would, it is alleged by DOT, lead to a more efficient use of resources in the railroad industry and tend to eliminate obsolescent or improperly capitalized rate base items. Another party, General Mills (GMI), while not initially advocating a funds flow analysis per se did comment in some detail on the outflow from the railroad industry of capital in the form of dividends.[6] Although the respondents did not specifically comment upon the DOT proposal they did introduce rebuttal testimony designed to disprove the GMI contention that large capital funds payouts have undoubtedly hastened the decline of the railroad industry, the elevation of railroad rates, and the curtailment of rail service. GMI in its reply statement urged further consideration be given to the DOT's funds flow analysis which it described as "perceptive." However, another party in its reply characterized the DOT suggestions as "simply too rudimentary" stating that, "In essence, then, DOT has provided a suggestive list of data and ratios which have a general bearing upon revenue-need terminations, but has not presented a proposal which at this stage can be seriously evaluated, much less adopted, by the Commission."[7] Clearly, the issue of funds flow analysis must be further considered in this proceeding before it can be determined whether or not the suggested approach warrants implementation.

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[4] The enactment of the Regional Rail Reorganization Act of 1973, Public Law 93-236, on January 2, 1974, added a new dimension to this question which should be taken into consideration.

[5] By Notice of Proposed Rulemaking and Order entered on December 1, 1972, in Ex Parte No. 290, Procedures Governing Rail Carrier General Increase Proceedings, the Commission proposed that "each individual petitioning railroad shall also submit a Funds Flow Analysis (Source and Application of Funds) for each of the three calendar years preceding the effective date of the proposed increases. This analysis shall take the form prescribed in Docket No. 35344, *Annual Reports of Class I Railroad Companies, Schedule 397, Statement of Changes in Financial Position*, 341 I.C.C. 205, 227, petition for reconsideration pending."

[6] For a further discussion of railroad industry dividends policy, see appendix C.

[7] Reply statement filed on behalf of Waterways Freight Bureau and Water Transport Association.

With respect to data gaps pertaining to the capital needs of the railroad industry, respondents point out that the Commission presently receives quarterly a document entitled "Statistical Series Circular No. 31," which discloses how much has been and will be invested by each railroad each quarter. This document, respondents state, "is only in aggregate dollars and does not specify for what facilities or type of property such investment was made." Having alluded to the omission of relevant information, respondents volunteer that "it would not be totally objectionable to furnish it in that form." It is believed desirable to gather as much information as possible on the capital needs of the railroad industry. Accordingly, during the pendency of this proceeding, it would be helpful if respondents were to amend their quarterly filings of Statistical Series Circular No. 31 so as to "specify for what facilities or type of property such investment was made" in the manner provided in appendix D commencing with the first quarter of 1974.

Almost all of the relevant testimony and exhibits forming the record in this proceeding relate to the selection of the rate base on which to predicate the rate of return. Only the respondents have advanced arguments and exhibits in support of an identified rate of return. The railroads propose that the industry should have the opportunity to strive for "a reasonable rate of return in the range of 10%." A rate of return of 10 percent is claimed to be necessary in order to take into account on-going capital needs, cost of capital substantially greater than that which prevailed in the past, and the high replacement costs presently being experienced. It is the Coordinator's opinion that although the current industry rate of return of about 3 percent, as presently computed, is hardly adequate, the record in this proceeding, as it now stands, nevertheless provides insufficient justification in support of a rate of return level that respondents should be encouraged to attain. Accordingly, this matter will be further considered in the subsequent stage of this proceeding.

With the possible exception of oil pipelines, this Commission, unlike some other Commissions, does not prescribe or approve rates based solely on a rate of return concept. The adequacy of the railroad rate of return, in recent years the inadequacy of the railroad rate of return, has not been the determining factor in the Commission's consideration of railroad general increase proposals. The primary factor considered by the Commission in railroad general increase proceedings has historically been "a revenue need" rather than a specific need for a definite rate of return. Similarly, when considering whether a particular rate is reasonable or unreasonable, the Commission has not generally given consideration to the rate of return concept but has given consideration to the following factors, in addition to others: volume of traffic, density of traffic, length of haul, cost of service, value of service, raw or finished state of the commodity, carrier liability (loss or damage experience), shippers' commercial needs, market competition, and carrier competition. Hence, while the ultimate decision in this proceeding will undoubtedly constitute a major Federal action, it is unlikely that this major Federal action will have a significant immediate effect on the rates for transportation services. Therefore, it is not believed that the ultimate decision in this proceeding to be rendered by the Commission will significantly affect the quality of our human environment, 42 U.S.C. 4321 *et seq.*

Whether or not the Commission in this proceeding must nevertheless issue an environmental impact statement cannot be determined at this time. The respondents and DOT have alluded to the fact that a rate of return at a level high enough to enable the railroad industry to embark on desirable environmental projects is necessary. The other parties to this proceeding have not specifically commented upon the environmental implications that may be involved in this proceeding. Accordingly, all parties to this proceeding will, on or before March 29, 1974, be given the opportunity to submit representations with respect to environmental amenities that may be involved in this proceeding. The Coordinator is fully prepared to comply with all relevant provisions of The National Environmental Policy Act of 1969 (NEPA) including, if necessary, the issuance of an impact statement in accordance with the detailed procedures prescribed in section 102(2)(c) of the NEPA. Such a statement will, if prepared, be served early enough so that whatever information it contains can be commented upon by the parties and the statement, together with the comments, can practically serve as an input into the decisionmaking process. As stated in *Investigation of Railroad Freight Rate Structure,* 345 I.C.C. 1, "The ultimate decisions ***will be made by the Commission, and the Coordinator will not participate therein."

In the prior report in this proceeding, supra, 831, the Commission observed that a number of parties had suggested that Ex Parte No. 271 be consolidated with Ex Parte No. 270, *Investigation of Railroad Freight Rate Structure,* 340 I.C.C. 868, and ruled on the suggested consolidation in the following manner:

> Although we recognize that there is some relationship between the two proceedings, we believe that, in view of the nature of the further proceedings which we have simultaneously decided upon Ex Parte No. 270, a separate proceeding herein will facilitate a more expeditious decision on the merits.

While consolidation, at least at this stage of the development of the records in Ex Parte No. 270 and Ex Parte No. 271, is not warranted, the issues involved in the two separately instituted proceedings are very definitely related. Certainly, the joint issues in this proceeding, rate base and rate of return, cannot be decided in a vacuum and must of necessity be related to the broad Ex Parte No. 270 rate structure investigation presently being conducted under various subnumbers.[8]

One party to the proceeding[9] in a reply statement has concluded that the burden for developing the record in this proceeding rests with the Commission, the railroads and interested governmental agencies:

> The shipping public has only limited resources and information with which to address the many issues presented by this proceeding. We can only suggest and recommend areas for study and consideration. The great burden of the work must be undertaken by the railroads, the Commission, and those agencies of the Government, such as DOT, that have the resources and the responsibility for the development of an affirmative public policy toward the railroad industry.

This party suggests that the Commission follow the following procedure which, in the opinion of the Coordinator, has much to commend its adoption:

> To this end, we strongly suggest that the Commission either direct its consultants to prepare and submit for the record a thoroughgoing evaluation of the financial problems of the railroad industry and matters relating thereto, or to prepare a

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[8] Ex Parte No. 270 (Sub-Nos. 1A and 1B), Investigation of Railroad Freight Rate Structure—Export-Import Rates and Charges.

Ex Parte No. 270 (Sub-No. 2), Investigation of Railroad Freight Service.

Ex Parte No. 270 (Sub-No. 3), Investigation of Railroad Freight Rate Structure—Uneven Effects of General Increases on Individual Railroads.

Ex Parte No. 270 (Sub-No. 4), Investigation of Railroad Freight Rate Structure—Coal.

Ex Parte No. 270 (Sub-No. 5), Investigation of Railroad Freight Rate Structure—Iron Ores.

Ex Parte No. 270 (Sub-No. 6), Investigation of Railroad Freight Rate Structure—Scrap Iron and Steel.

Ex Parte No. 270 (Sub-No. 7), Investigation of Railroad Freight Rate Structure—Lumber and Lumber Products.

Ex Parte No. 270 (Sub-No. 8), Investigation of Railroad Freight Rate Structure—Paper and paper Products.

[9] Joint reply filed on behalf of General Mills, Inc., American Paper Institute, American Retail Federation, Certain-teed Products Corp., and Ford Motor Company.

> tentative report based on the comments submitted to date with the consultants' input to follow at a later date. Whichever event, we believe the parties should have the right to reply to the results of either of these approaches.

Although the Commission has no consultants that it can direct to follow the quoted suggestions, it does have a Special Projects Counsel charged with the responsibility of assisting in the development of an adequate record in this proceeding on which the Commission can base its decision. To assist the Special Projects Counsel in his most difficult of assignments, the Commission has set up and staffed a temporary in-house special projects unit. This unit is presently studying Ex Parte No. 271 and related matters.

Having concluded that the record in this proceeding is inadequate to base a decision upon, I believe it absolutely essential that the Commission have the benefit of the input of the Special Projects Counsel and, of course, the further participation of the parties. Accordingly, I am requesting that the Special Projects Counsel, who up to now has not had an opportunity to participate in this proceeding, advise the Commission and the parties of record by March 15, 1974, when he believes he will be able to file his initial representations. Once this information is received, a procedural order will be entered assigning this matter for further consideration. In the interim parties of record should review their previously filed verified statements with a view towards supplementing the record.

An appropriate order will be entered.

APPENDIX A

Parties filing statements of position in Ex Parte No. 271

- Aluminum Association
- American Retail Federation
- Banks, R.L. & Associates, Inc.
- Certain-teed Products Corporation
- Commonwealth of Pennsylvania jointly with Pennsylvania Public Utility Commission
- Department of Defense, U.S.
- Department of Transportation, U.S.
- Eastern, Western and Southern Railroads
- Garvey, Inc. jointly with C-G-F Grain Company, Inc.
  - Garvey Elevators, Inc.
  - Garvey Grain, Inc.
  - Lincoln Grain, Inc.
- General Mills, Inc.
- General Services Administration, U.S.
- Laciak, John A.
- Manufacturing Chemists Association
- Monsanto Company
- National Association of Secondary Material Industries, Inc.
- National Industrial Traffic League
- Portland Freight Traffic Association
- Waterways Freight Bureau jointly with Water Transport Association
- Western Wood Product Association

Parties filing verified statements in Ex Parte No. 271

Allied Chemical Corporation (not verified)
Department of Transportation, U.S.
Foster Associates, Inc.
General Mills, Inc. jointly with
  American Paper Institute
  American Retail Federation
  Certain-teed Products Corp.
General Services Administration, U.S.
Manufacturing Chemists Association
Monsanto Company
National Industrial Traffic League
Official, Southern and Western territory railroads
Waterways Freight Breau jointly with
  Water Transport Association

Parties filing reply verified statements in Ex Parte No. 271

Allied Chemical Corporation
General Mills, Inc. jointly with
  American Paper Institute
  American Retail Federation
  Certain-teed Products Corp.
Ford Motor Company
Official, Southern and Western territory railroads
Waterways Freight Bureau jointly with
  Water Transport Association

APPENDIX B

Ex Parte No. 270 (Sub-No. 3)

INVESTIGATION OF RAILROAD FREIGHT RATE STRUCTURE—UNEVEN EFFECTS OF GENERAL INCREASES ON INDIVIDUAL RAILROADS

November 29, 1973

NOTICE TO ALL PARTIES:

The order entered in this subnumbered investigation on September 28, 1973 provided that statements of intention to participate were to be filed on or before November 1, 1973, and "that persons not timely filing a statement of intention by November 1, 1973, will not be permitted to participate except upon a showing of good cause for such late participation and leave granted." The persons listed on the attached service list are considered to have timely filed the required statements of intention to participate.[1]

It is noted that a number of the persons on the service list have indicated that it might be possible for them to consolidate their interests with other interested parties. In the event that persons are able to consolidate their interests with others, and such consolidation is recommended, it would be appreciated if parties will promptly advise the Commission (Interstate Commerce Commission, Office of Proceedings, Room 5354, Washington, D.C. 20423) so as to facilitate the amending of the service list.

It is also noted that a number of parties have requested that several persons be served with copies of all documents filed in this proceeding. The service of several persons representing a single party entails additional expense for all concerned. As reflected in the attached service list, the requests for multiple service have been honored. However, it is strongly urged that parties reconsider their requests for multiple service and promptly advise the Commission of names that may be deleted from the service list.

The order entered September 28, 1973 in this proceeding further provided "That following the circulation of the service list, a procedural order will be entered by the

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[1] Service list not attached to this appendix.

Coordinator directing the further procedures that must be followed in this investigation proceeding." The Coordinator, Commissioner Hardin, has not as yet determined the procedure to be followed in this investigation proceeding. However, the Coordinator has tentatively decided, at a date to be announced in the future, to ascertain from the parties issues that should be explored in this proceeding. As indicated by the following quote, taken from a reply verified statement filed by the respondents in Ex Parte No. 271, Net Investment—Railroad Rate Base and Rate of Return, certain issues raised in the related proceeding may more appropriately be considered in this proceeding:

"J. *A Recommendation That the Commission Give Greater Consideration To 'Divisions' and To The Pooling Measures Is Without The Scope of This Proceeding.*

It is suggested that the Commission should give more attention to the question of 'revenue needs' in considering the reallocation of divisions between the railroads pursuant to Section 15(6) of the Act. As the Commission can well understand, the railroad industry's response to that suggestion is necessarily divided. Some railroads vigorously oppose such a suggestion, while other railroads are equally serious in their endorsement of that recommendation. However, all railroads suggest that such a recommendation is not germane to the issues before the Commission here. Therefore, no further comment on this point will be made by the industry.

In the same section of this statement (pp. 16-17), it is also suggested that the Commission should explore the feasibility of making greater use of the provision of 'pooling of revenues' and in particular it is suggested that this pooling be considered as a variation of the escrow recommendation by requiring that there 'be established a general pooling of revenues that result from Ex Parte General Freight Rate Increase cases for the purpose of generating capital investment funds for the benefit of the industry as a whole.'

It is highly impractical to pool the revenues of a general freight rate increase for the purpose of generating capital investment for the benefit of the industry as a whole. The industry is comprised of individual companies with varying needs, problems and traffic patterns. To create a pooling of funds for capital improvements via a general rate increase contemplates an additional decisional process with its attendant delays.

Essentially the GMI proposal in the imposition of an additional decision-making process by the Commission, superimposed on the present managerial operation of the railroads. One of the problems of the railroad industry is the time required to make changes and carry out forward-going programs. An additional decisional process involving the applicability of capital expenditures would be superfluous, time-consuming and inefficient. The Commission, in considering this recommendation of GMI, should recognize the basic public interest in an adequate transportation system which can only be obtained if railroads are permitted to earn an adequate return on their investment.

K. *Capital-Improvements-Assistance by Means of Escrow Funds.*

Again this remedy does not resolve the problem of inadequate earnings. Escrow funding entails rigidity and inhibits the efficient utilization of capital funds. Capital needs of the railroads will vary by railroad and territory.

A dedication of funds will not be a helpful solution in areas of investment. Again involved in each case is a resolution of the feasibility and desirability of the particular objective.

The incentive per diem Ex Parte No. 252 is a case in point. Additional funds are being generated but must be dedicated and restricted to the continuance of a fleet of plain, unequipped boxcars.

The plan requires that capital so dedicated continue to be invested in equipment which conceivably for the future is no longer economically justified for the particular railroad holding the funds. A particular railroad may need covered hoppers instead. In short, for a given railroad the purchase of additional plain boxcars may be economically imprudent when considering other equipment alternatives. The point is that needs and priorities differ greatly from railroad to railroad.

None of these remedies are directed to the issues in this proceeding involving the propriety of the industry's net investment base, low earnings position and the resulting low rate of return. Before dealing with problems of distribution of capital it is necessary to obtain adequate earnings to generate capital. The remedies suggested are beyond this proceeding and premature."

Accordingly, parties should, without awaiting the entry of a procedural order, begin to study the various issues that relate to the broad study of "Uneven Effects of General Increases on Individual Railroads." Further, it is suggested that parties, again without awaiting the entry of a procedural order, consider what representations, if any, they intend to file that will, in the language of the September 28, 1973 order, "enable the Coordinator properly to assess and quantify the environmental consequences of the numerous alternatives that may be pursued in the investigation program envisioned in this proceeding as required by the NEPA."

In view of the reference to Ex Parte No. 271, Net Investment—Railroad Rate Base & Rate of Return, a copy of this notice will be served on all parties of record in Ex Parte No. 271. Further, the Commission will serve upon respondents a copy of all reports and orders entered by the Commission in this subnumbered proceeding.

APPENDIX C

With respect to the railroad industry dividends payment, the entire Commission in Ex Parte No. 295, *Increased Freight Rates and Charges, 1973,* 344 I.C.C. 589, 610-611, commented as follows:

> "One other matter should be mentioned in connection with our discussion of cash flow generated by the railroads. Certain protestants refer to dividend payments, implying that the size of the dividends has affected the sum of money available for capital expenditures. We have restated the cash flow statistics in appendix E, table 1, to include for each year the dividends paid. As there shown, the total capital outlays for the years 1963 through 1972 still exceed the adjusted cash flow by $600 million. Averaging only $1.3 billion annually, the cash flow falls far short of estimated requirements for capital expenditures over the next decade."

Appendix E, table 1, referred to in the quoted excerpt from Ex Parte No. 295, is for convenience set forth below:

EX PARTE NO. 295 - APPENDIX E

TABLE 1

Capital expenditures and cash flow (in millions)

Year	Capital outlays (1)	Cash flow as submitted by respondents[1] (2)	Cash dividends paid[2] (3)	Cash flow in including cash dividends (4)
1963	$1,043.8	$949.7	$378.6	$1,328.3
1964	1,417.3	926.8	457.2	1,384.0
1965	1,630.7	1,057.9	470.8	1,528.7
1966	1,952.8	1,149.2	499.8	1,649.0
1967	1,522.5	816.7	537.0	1,353.7
1968	1,187.0	828.7	515.8	1,344.5
1969	1,509.4	815.6	487.4	1,303.0
1970	1,351.4	618.0	421.2	1,039.2
1971	1,177.6	784.1	386.4	1,170.5
1972	1,234.5	926.5	408.3	1,334.8
Total	14,036.0	8,873.2	4,562.5	13,435.7
Average	1,403.6	887.3	456.2	1,343.6

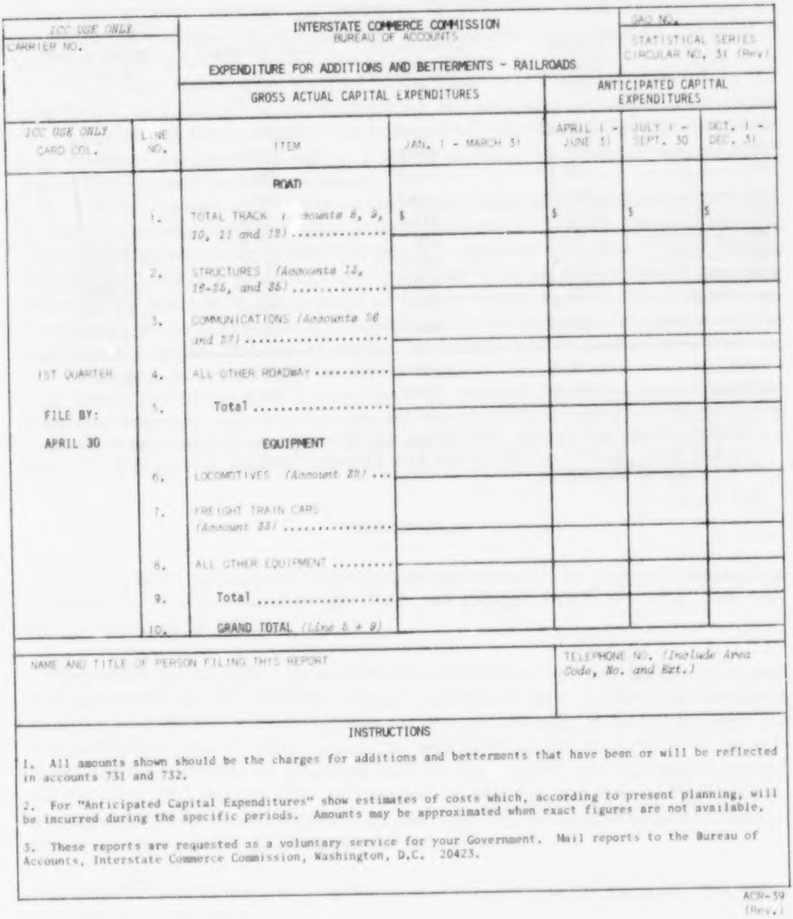
[1] Includes ordinary net income, depreciation and retirement charges, less cash dividends.

[2] Amounts shown for 1963 to 1969 derived from Transport Statistics. Data for 1970, 1971, and 1972 furnished by respondents.

APPENDIX D

REVISED STATISTICAL SERIES CIRCULAR NO. 31

YEAR 197__



ICC USE ONLY

CARRIER NO.

INTERSTATE COMMERCE COMMISSION
BUREAU OF ACCOUNTS

EXPENDITURE FOR ADDITIONS AND BETTERMENTS - RAILROADS

OAO NO.

STATISTICAL SERIES CIRCULAR NO. 31 (Rev)

ICC USE ONLY CARD COL.	LINE NO.	ITEM	GROSS ACTUAL CAPITAL EXPENDITURES JAN. 1 - MARCH 31	ANTICIPATED CAPITAL EXPENDITURES APRIL 1 - JUNE 30	 JULY 1 - SEPT. 30	 OCT. 1 - DEC. 31
		ROAD				
	1.	TOTAL TRACK *(Accounts 8, 9, 10, 11 and 12)*	$	$	$	$
	2.	STRUCTURES *(Accounts 13, 16-26, and 35)*				
	3.	COMMUNICATIONS *(Accounts 26 and 27)*				
1ST QUARTER	4.	ALL OTHER ROADWAY				
FILE BY:	5.	Total				
APRIL 30		**EQUIPMENT**				
	6.	LOCOMOTIVES *(Account 52)* ...				
	7.	FREIGHT TRAIN CARS *(Account 53)*				
	8.	ALL OTHER EQUIPMENT				
	9.	Total				
	10.	GRAND TOTAL *(Line 5 + 9)*				

NAME AND TITLE OF PERSON FILING THIS REPORT

TELEPHONE NO. *(Include Area Code, No. and Ext.)*

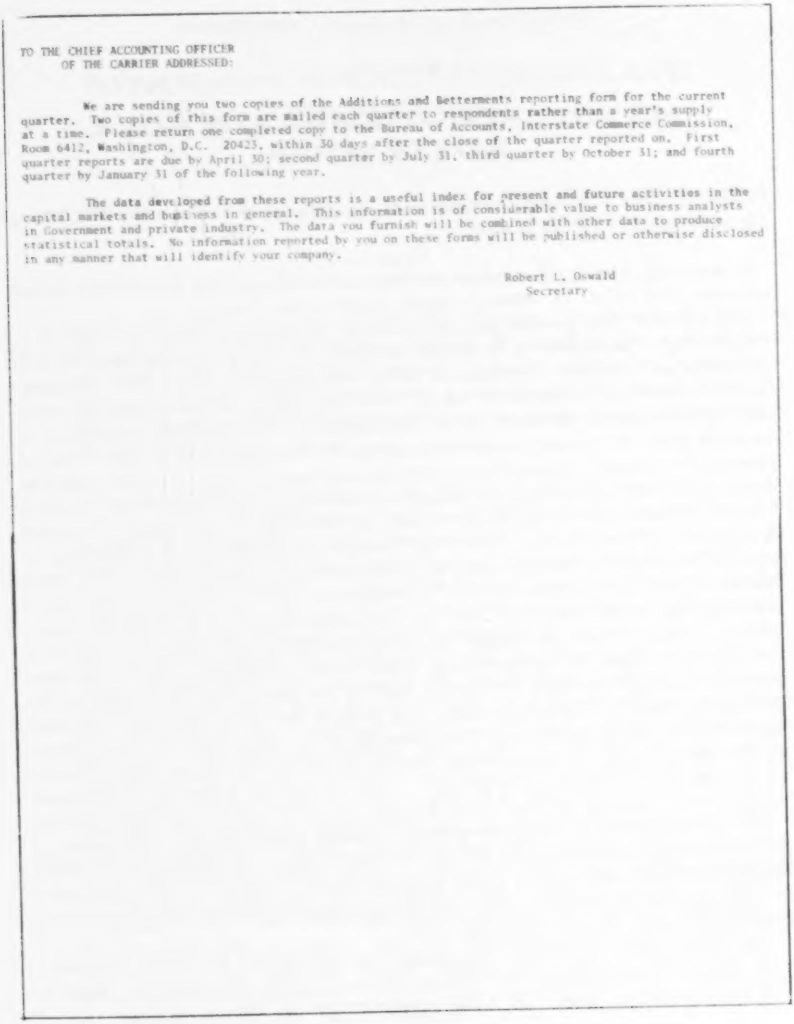
INSTRUCTIONS

1. All amounts shown should be the charges for additions and betterments that have been or will be reflected in accounts 731 and 732.

2. For "Anticipated Capital Expenditures" show estimates of costs which, according to present planning, will be incurred during the specific periods. Amounts may be approximated when exact figures are not available.

3. These reports are requested as a voluntary service for your Government. Mail reports to the Bureau of Accounts, Interstate Commerce Commission, Washington, D.C. 20423.

ACR-39
(Rev.)



TO THE CHIEF ACCOUNTING OFFICER
OF THE CARRIER ADDRESSED:

We are sending you two copies of the Additions and Betterments reporting form for the current quarter. Two copies of this form are mailed each quarter to respondents rather than a year's supply at a time. Please return one completed copy to the Bureau of Accounts, Interstate Commerce Commission, Room 6412, Washington, D.C. 20423, within 30 days after the close of the quarter reported on. First quarter reports are due by April 30; second quarter by July 31, third quarter by October 31; and fourth quarter by January 31 of the following year.

The data developed from these reports is a useful index for present and future activities in the capital markets and business in general. This information is of considerable value to business analysts in Government and private industry. The data you furnish will be combined with other data to produce statistical totals. No information reported by you on these forms will be published or otherwise disclosed in any manner that will identify your company.

Robert L. Oswald
Secretary

ORDER

INTERSTATE COMMERCE COMMISSION

Ex Parte No. 271

NET INVESTMENT—RAILROAD RATE BASE & RATE OF RETURN

PRESENT: Dale W. Hardin, Commissioner, Coordinator of Ex Parte No. 271, having the authority to enter this order.

It appearing, That for the reasons set forth in the report of the Coordinator issued this date, 345 I.C.C. 55, which is hereby made a part hereof:

It is ordered, That persons not now of record as participating in this proceeding, and desiring to participate in the further procedures in this proceeding shall file with the Interstate Commerce Commission, Office of Proceedings, Room 5342, Washington, D.C., 20423, on or before March 11, 1974, the original and two copies of a statement of his interest. Inasmuch as the Commission desires wherever possible (a) to conserve time, (b) to avoid unnecessary expense to the public, and (c) the service of pleadings by parties in proceedings of this type only upon those who intend to take an active part in the proceeding, the statement of intention to participate shall include a detailed specification of the extent of such person's interest, including (1) whether such interest extends merely to receiving Commission releases in this proceeding, (2) whether he genuinely wishes to participate by receiving or filing evidence, (3) if he so desires to participate as described in (2), whether he will consolidate or is capable of consolidating his interests with those of other interested parties by filing joint statements in order to limit the number of copies of pleading that need be served, such consolidation of interests being strongly urged by the Commission, and (4) any other pertinent information which will aid in limiting the service list to be used in this proceeding; that the Commission shall then prepare and make available to all such persons a list containing the names and addresses of all parties desiring to participate in this proceeding for the purposes specified in (2) above; and that persons not timely filing a statement of intention by March 11, 1974, will not be permitted to participate except upon a showing of good cause for such late participation and leave granted.

It is further ordered, That parties wishing to submit representations with respect to the environmental amenities that may be involved in this proceeding, shall (1) define the environmental issue present in this proceeding, and (2) suggest to the Coordinator the approach and methodology which should be utilized in the study of environmental implications on or before March 29, 1974.

And it is further ordered, That the Special Projects Counsel, Leonard S. Goodman, Esq., inform the Commission on or before March 15, 1974, the date upon which he will be prepared to submit his initial representations in this proceeding.

EX PARTE NO. 270 (SUB-NO. 4)

INVESTIGATION OF RAILROAD FREIGHT RATE STRUCTURE COAL

Decided December 3, 1974

1. Upon investigation of the railroad freight rate structures on coal, and in particular the effect of general freight rate increases thereon, developed detailed maps of freight rate origin and destination groups; made extensive revenue-cost comparisons; constructed detailed relationships between commodity rates on coal and Docket No. 28300 class-rate scales; and composed other material measuring the reasonableness of the freight rate structures on coal.

2. Upon consideration of the record, found that the freight rate structures on coal are, with few exceptions, compensatory and not unreasonably high; that a need exists for revisions of terminology in tariff schedules relating to unit train, trainload, and multiple-car schedules; that the impact of general freight rate increases applied to the transportation of coal have not been self-defeating but have been necessary to offset increased labor costs and higher prices of materials and supplies; that the application of general increases authorized by the Commission has not caused any substantial distortions in the freight rate structures, but that some distortions in the freight rate structures exist which are not related to, but are exaggerated by, the impact of general freight increases; that the general freight rate increases sought by the railroads and authorized by the Commission have been for the purpose of offsetting the impact of higher prices of materials and supplies and increases in wages and not related to or for the improvement of rail service or car supply (the record in this proceeding was assembled prior to Ex Parte No. 305); that a need exists for the development of a zone of reasonableness for movements of coal from specified coal producing districts in the Rocky Mountain-Upper Missouri River region, accompanied by an appropriate environmental impact statement; that a need exists for realignment of functions of certain bureaus and offices of the Commission in order to fulfill the Commission's duties and responsibilities in connection with the freight rate structures on coal, including the return from the Department of Transportation of the processing of the 1-percent waybill sample; and that a need exists for a perpetually-open proceeding for the continuing accumulation of a data bank available to shippers, carriers, and the Commission in order to determine in appropriate

proceedings the actual revenue needs of the railroads and the impact of increases on particular movements and for other purposes.

3. Appropriate recommendations consistent with the findings made, including reasonable bases of maximum and minimum scales of rates on bituminous coal from seven coal producing districts in the West to points east of the Rocky Mountains.

4. Order entered closing this phase of the Sub-No. 4 proceeding.

Harry N. Babcock, William F. Betts, Joseph T. Bodell, John Burchell, J. T. Clark, John H. Doeringer, Louis T. Duerinck, Richard Gleason, Edward A. Kaier, William C. Leiper, Richard J. Murphy, Alfred V. Nowakowski, William J. O'Brien, Thomas H. Ploss, Charles C. Rettberg, Jr., Gerald J. Robinson, Albert B. Russ, Jr., John F. Smith, William H. Teasley, Donald M. Tolmie, and *John S. Walker* for respondents.

Leonard S. Goodman and *Martin J. Lewin*, Special Projects Counsel to the Commission.

Clifford Elkins for New York State Department of Transportation.

Alfred N. Lowenstein for Pennsylvania Public Utility Commission.

Gordon P. MacDougall for Commonwealth of Pennsylvania.

George H. Morin for North Dakota Public Service Commission.

David M. Schwartz for Old West Regional Commission.

John Warner for Government of the Province of Ontario, Canada.

George B. Breznay, John H. Caldwell, John F. Donelan, Peter A. Fitzpatrick, D. E. Furnas, Ernest Gigeti, John E. Gross, John Guandolo, Armond Heerman, Lawrence W. Kobitter, Eugene T. Liipfert, Shelia H. Marshall, John K. Maser III, Charles J. McCarthy, R. P. McFall, J. M. McMahon, Paul V. Miller, Allan N. Moore, Klaus H. Permer, Russell R. Sage, and *B. M. Scanlon* for shippers and other interested parties.

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REPORT AND ORDER OF THE COORDINATOR

HARDIN, *Commissioner:*

This subnumbered proceeding, as noted in the prior report of the Coordinator in *Investigation of Railroad Freight Rate Structure*, 345 I.C.C. 1, was instituted for the purpose of examining in detail the rate structure on coal. As stated in the prior report, the principal foci of the proceeding are as follows: (1) the possible self-defeating nature of general rate increases on coal with respect to generating revenues, (2) any disparities and distortions in rate relationships caused by general rate increases on coal, (3) the uneven effects of general freight rate increases on coal on individual railroads, and (4) the effect of such general increases on coal on railroad incentive to improve service in line with shipper requirements.

The evidence in this proceeding was developed under a nonadversary procedure. A format for the presentation of evidence was established and all persons were given a full opportunity initially to submit evidence they deemed appropriate, including evidence of cost of service. Opportunity was likewise given all parties to present evidence in rebuttal and surrebuttal. In order to promote a nonadversary atmosphere throughout this proceeding, the parties were urged to consult with the Special Projects Counsel, an independent counsel appointed by the Commission to assist in the development of a record in the public interest.

The order instituting this investigation directed the parties to submit evidence divided into six parts. These parts relate to the previously stated issues.

Under Part I all parties were requested to furnish maps, diagrams and representative rates depicting the railroad freight rate structure on coal and the flow of traffic thereunder.

Under Part II the parties were requested to submit evidence designed to show whether general increases in freight rates on coal proposed by the carriers and authorized by the Commission, were, in fact, self-defeating or whether such revenues actually improved the net revenues of the railroads.

Under Part III the parties were requested to submit evidence of any disparities and distortions in the rate structure, particularly those which may have been caused by the application of general freight rate increases.

Under Part IV the parties were requested to submit evidence of uneven effects of general increases in freight rates on coal upon individual railroads. However, it is to be noted that the Coordinator instituted, because of the importance of this subject and its relationship to other commodities, Ex Parte

No. 270 (Sub-No. 3), Investigation of Railroad Freight Rate Structure - Uneven Effects of General Increases on Individual Railroads.

Under Part V the parties were requested to submit evidence bearing on the issue of whether general increases have provided sufficient revenues to induce the railroads to undertake improvements in service to meet shippers' requirements, and evidence as to whether the railroads, in their proposed rates in general rate increase proceedings, have taken into account possible variations in coal services being provided shippers. In this connection it is to be noted that the Commission in Ex Parte No. 270 (Sub-No. 2), Investigation of Railroad Freight Service, instituted a separate proceeding relative to railroad service in connection with all commodities.

Under Part VI the parties were permitted to submit any evidence they deemed necessary or helpful to the investigation which did not fall within the above specified categories.

HIGHLIGHTS OF THE REPORT

The following are the main highlights of the report:

-o- Furnishes the Commission, public interest groups, shippers and carriers with detailed information concerning the freight rate structures on coal for future use.
-o- Contains 37 maps showing in extensive detail the origin freight rate groups on coal.
-o- Contains more than 200 cost-revenue comparisions relating to the compensatory nature of the freight rate structures on coal.
-o- Contains 20 graphs depicting the comparative rate relationships of coal rates, including comparisons with the Docket No. 28300 class-rate scale to aid in measuring the reasonableness of the freight rate structures on coal.
-o- Contains more than 200 comparisons of freight rates, and ton-mile and car-mile earnings derived therefrom.
-o- Contains a number of indices for measuring the reasonableness of the freight rate structures.
-o- Describes the volume of movement from origin mines to destination areas and industries.
-o- Contains a financial analysis of railroads receiving more than 20 percent of their freight revenue from coal.
-o- Dispels misconceptions concerning the freight rate structures on coal, and in particular the effect of general freight rate increases thereon.

-o- Notes weaknesses in the freight rate structures on coal for the benefit of carriers, shippers, and the Commission.
-o- Recommends corrective actions to be taken by the carriers and the Commission.

At times in the report the editorial "we" is used. However, the report is the sole responsibility of the Coordinator and does not necessarily reflect the views of the Commission. Exceptions to the report may be filed in accordance with the Commission's General Rules of Practice and the report will then be considered by the Commission in light of the exceptions. Unless otherwise indicated, rates are shown in amounts per net ton as of September 1, 1973, and costs are shown as of December 31, 1973.

PART I - THE FREIGHT RATE STRUCTURE ON COAL AND THE TRAFFIC FLOW THEREUNDER

The purpose of Part I is to give a detailed analysis of the railroad rate structure on coal. While the term "rate structure" is commonly used, and will be used in this report, it is a fallacy to assume that the railroads have a single freight rate structure on coal or even a single freight rate structure within regions. The railroad rate structures on a particular commodity consist of numerous schedules of charges for rail transportation services. Although these schedules are frequently constructed in conformity with a particular rate scheme, such as on a tapering mileage basis, in most instances the basis or bases for the rates is obscure and if known, that knowledge is limited to the ratemaking railroad or to the most sophisticated tariff expert.

The rate scheme adopted by the ratemaker, or when ordered by the Commission, may be simple or complex: simple in the case of a mileage rate scale; complex in the case of group-related rates with origin and destination groups varying widely in size and configuration and comprising single-car rates, multiple-car rates, concentration - point rates, annual volume rates, unit-train rates, local rates, export rates, refund rates, joint water-rail rates, joint rail rates, proportional rates, interstate rates subject to the aggregate-of-intermediate and long-and-short-haul provisions of section 4 of the Interstate Commerce Act, and intrastate rates subject to differing state regulatory standards and laws.

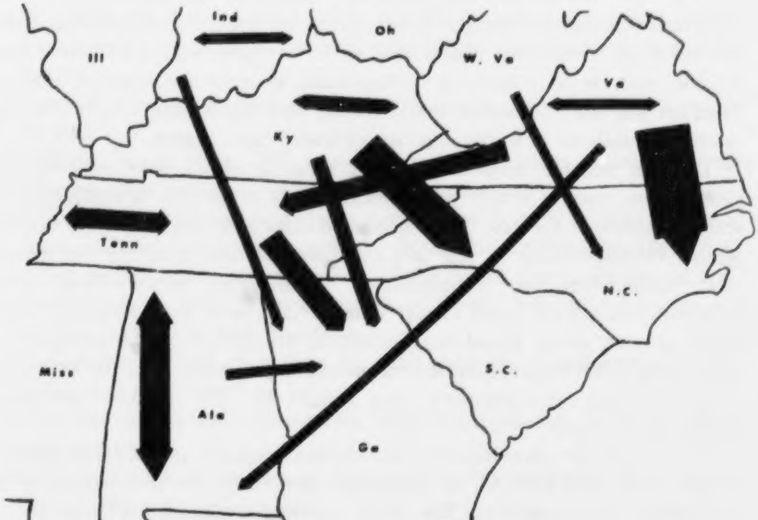
The reasons for choosing one basis of rates as against another in building a freight rate structure for a particular movement or movements of a commodity are numerous. The most important reasons are: volume of movement; carrier competition; competition between commodities; market competition; the elasticity or inelasticity of demand for the commodity; the cost of service; and Federal and State laws and regulations governing transportation services.

The freight rate structures on coal, particularly bituminous coal, are complex and reflect the economic needs of the industry. It has been observed that: "The economics of the bituminous coal industry have baffled even experts."[1] Figure A, showing the flow of coal traffic on the Southern Railway System, is illustrative of the complexity and enormity of coal movements.

Regardless of how complex or baffling the economics of the movement of coal may be, the making and filing of rates cannot be conducted in ignorance of the complex shipping and receiving interests for which the rates are designed. For one thing, the rail rate structure must be flexible in order to meet the changing needs in the marketplace of the coal industry. In short, to be viable, the freight rate structure must keep up with the times.

FIGURE A

COAL TRAFFIC FLOW-1972-SOUTHERN RAILWAY



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[1] Justice William O. Douglas, *Ayrshire Colleries Corp.* v. *U.S.*, 335 U.S. 573, 593.

All coal produced in the United States may be classed under four headings: anthracite, bituminous, sub-bituminous, and lignite. Anthracite, or hard coal, is nearly 90 percent carbon with only a small amount of volatile elements. Bituminous, with a lower fixed carbon content, is ranked as high, medium, or low volatile, depending upon the proportion of bitumens or volatile elements, which are released by heat. Sub-bituminous contains 15 to 30 percent moisture and has a lower BTU (British Thermal Unit) content than ordinary bituminous. Because bituminous and sub-bituminous coal are at times used interchangeably, they will be considered herein as one class. Lignite, the youngest coal geologically, has more volatile elements and moisture than any of the others and a lower carbon content. Table 1 shows the chemical composition and heat efficiency of several ranks of coal.

TABLE 1

Chemical Composition and Heat Efficiency of Several Ranks of Coal[1]

Rank of Coal	Fixed Carbon	Volatile Matter	Moisture	BTU's per pound of Coal
	percent	*percent*	*percent*	*units*
Anthracite	95.6	1.2	3.2	14,400
Bituminous (high rank)	64.6	32.2	3.2	15,160
Bituminous (low rank)	47.0	41.4	11.6	12,880
Lignite	37.8	18.8	43.4	7,400

[1] Calculated on an ash-free basis

Commercially, bituminous coal is rated as metallurgical or steam grade. Metallurgical coal, which is simply a coal that can be made into coke economically, softens and runs together when heated in a sealed oven. The volatile elements are driven off, leaving coke, a porous mass of nearly pure carbon, which produces a more intense heat than the volatile elements. In making coke, high volatile bituminous coal (averaging about 36 percent volatile matter) is usually blended with low volatile bituminous (about 18 percent volatile content), with low volatile accounting for 15 to 20 percent of the total.

The main use for coke is in making pig iron, most of which in turn is converted into steel. The principal use of steam coal is in boilers, the energy produced being then directed to heating or processing.

Metallurgical coal can be used in place of steam coal, although such substitution is costly; steam coal, however, cannot replace metallurgical grades.

Anthracite coal is not a major economic factor today. Its 1971 output of 8.7 million tons was equal to only 9.5 percent of the record U.S. anthracite production of 91.5 million tons in 1913, and was the lowest since 1865. The decline reflects the loss of its major space-heating market to oil, gas, and electricity. The production of lignite coal is also relatively small, and its statistics are sometimes included by statisticians with those of bituminous coal.

The coal reserves of the United States are divided into three major provinces: Eastern, Interior, and Western. The Eastern Province contains the vast Appalachian field extending from Pennsylvania to Alabama; the Interior Province includes the fields of Illinois-Indiana and Western Kentucky, the Southwest, and Great Plains; the Western Province contains the widely scattered western fields extending from the Canadian border to New Mexico. The quality of the coal generally declines from East to West, although the West contains vast reserves of the much-desired low sulfur coal. Appalachian coals are generally of high rank. Interior coals are of medium rank. The Western Province contains immense deposits of low rank bituminous, sub-bituminous, and lignite coals. Map Number I shows the location and approximate rank of coal in the continental United States.

MAP NUMBER 1

COAL RESERVES OF THE UNITED STATES

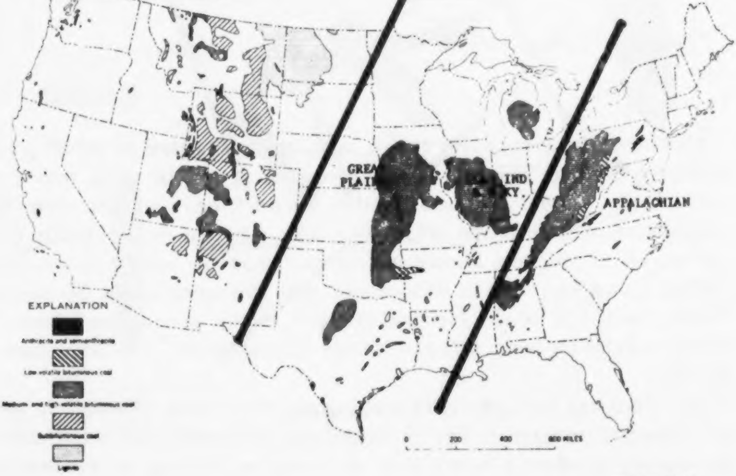
WESTERN
INTERIOR
EASTERN
GREA
PLAI
IND
KY.
APPALACHIAN
EXPLANATION
Anthracite and semianthracite
Low volatile bituminous coal
Medium and high volatile bituminous coal
Subbituminous coal
Lignite
0
200
400
600 MILES

Table 2 indicates the total estimated remaining coal resources of the United States, by State, as of January 1, 1967.

TABLE 2

Total Estimated Remaining Coal Resources of the United States January 1, 1967

[In Millions of Short Tons] [1]

State	Bituminous Coal	Subbituminous Coal	Lignite	Anthracite and Semi-Anthracite	Total
Alabama	13,518	0	20	0	13,538
Alaska	19,415	110,674	(2)	0	130,089
Arkansas	1,640	0	350	430	2,420
Colorado	62,389	18,248	0	78	80,715
Georgia.............	18	0	0	0	18
Illinois	139,756	0	0	0	139,756
Indiana	34,779	0	0	0	34,779
Iowa	6,519	0	0	0	6,519
Kansas	18,686	0	0	0	18,686
Kentucky...........	65,958	0	0	0	65,958
Maryland	1,172	0	0	0	1,172
Michigan	205	0	0	0	205
Missouri	23,359	0	0	0	23,359
Montana	2,299	131,877	87,525	0	221,701
New Mexico	10,760	50,715	0	4	61,479
North Carolina	110	0	0	0	110
North Dakota	0	0	350,680	0	350,680
Ohio	41,862	0	0	0	41,862
Oklahoma	3,299	0	0	0	3,299
Oregon.............	48	284	0	0	332
Pennsylvania	57,533	0	0	12,117	69,650
South Dakota	0	0	2,031	0	2,031
Tennessee...........	2,652	0	0	0	2,652
Texas	6,048	0	6,878	0	12,926
Utah	32,100	150	0	0	32,250
Virginia	9,712	0	0	335	10,047
Washington	1,867	4,194	117	5	6,183
West Virginia	102,034	0	0	0	102,034
Wyoming	12,699	108,011	(2)	0	120,710
Other States	618	4,057	46	0	[3] 4,721
Total	671,055	428,210	447,647	12,969	1,559,881

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[1] Derived from Department of the Interior, Geological Survey, Open File Report 1968, by Paul Averitt, U.S.G.S.

[2] Small resources of lignite included under subbituminous coal.

[3] Includes Arizona, California, Idaho, Louisiana, Nebraska, and Nevada.

Table 3 indicates the total production of bituminous coal and lignite, in 1972, by State, with estimates by month.

TABLE 3

Production of bituminous coal and lignite, in 1972, by State, with estimates by month[1]

(Thousand short tons)

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total [1]
Alabama	1,584	1,554	1,827	1,809	1,731	1,867	1,606	1,773	1,559	1,847	1,655	2,002	20,814
Alaska	47	50	52	57	60	58	56	61	60	58	55	54	668
Arizona	242	241	242	245	257	263	248	253	241	236	241	245	2,954
Arkansas	30	36	34	31	32	39	34	39	36	43	32	42	428
Colorado	530	511	519	395	425	395	287	494	477	488	507	494	5,522
Illinois	5,660	5,560	6,405	5,737	5,895	5,470	4,718	5,042	5,644	5,714	4,868	4,810	65,523
Indiana	1,990	2,128	2,345	2,059	2,375	2,145	2,017	2,208	2,101	2,286	2,151	2,149	25,949
Iowa	68	62	64	71	70	75	67	75	73	77	72	77	851
Kansas	124	116	105	98	110	95	92	100	97	98	98	99	1,227
Kentucky:													
Eastern	5,706	5,309	5,802	5,555	5,901	5,744	4,871	6,680	6,011	6,750	6,343	4,185	68,858
Western	4,336	4,034	4,410	4,222	4,485	4,365	3,702	5,077	4,568	5,130	4,820	3,181	52,330
Total	10,042	9,343	10,212	9,777	10,386	10,109	8,573	11,757	10,579	11,880	11,168	7,366	121,187
Maryland	216	145	135	134	130	134	104	106	134	134	129	139	1,640
Missouri	418	395	374	375	377	370	375	377	373	370	373	374	4,551
Montana:													
Bituminous	604	619	630	617	677	726	644	705	685	720	663	609	7,899
Lignite	24	25	26	25	28	30	26	29	28	29	27	25	322
Total	628	644	656	642	705	756	670	734	713	749	690	634	8,221
New Mexico	412	647	750	660	774	785	687	673	636	664	776	785	8,248
North Dakota (lignite)	595	640	526	455	550	532	542	548	536	571	587	550	6,632
Ohio	3,710	4,242	5,386	4,358	4,574	4,262	3,444	4,628	4,198	4,458	4,047	3,660	50,967
Oklahoma	240	247	275	228	223	216	187	182	200	202	223	201	2,624
Pennsylvania	6,811	6,691	7,224	6,434	6,850	5,646	4,539	6,651	6,181	6,501	6,436	5,975	75,939
Tennessee	915	913	933	955	954	972	925	924	967	931	928	943	11,260
Texas	315	295	310	300	320	320	350	370	360	375	370	360	4,045
Utah	398	360	408	410	408	406	386	406	408	400	404	408	4,802
Virginia	2,775	2,630	2,950	2,906	3,150	3,256	2,670	3,103	2,691	2,693	2,646	2,559	34,028
Washington	130	203	5	271	363	320	219	231	291	247	174	180	2,634
West Virginia	10,986	10,621	11,825	10,543	11,232	10,615	7,253	10,504	9,914	9,729	10,703	9,818	123,743
Wyoming	814	838	876	864	928	978	915	935	905	920	975	980	10,928
Total [2]	49,680	49,112	54,438	49,814	52,879	50,088	40,984	52,169	49,374	51,671	50,297	44,904	595,386

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[1] Figures are based principally upon railroad carloadings and river shipments supplemented by direct reports from certain local sources. These estimates include coal both shipped by truck, and used at the mines, and the totals represent output for all mines producing 1,000 tons or more per year.

[2] Data may not add to totals shown because of independent rounding.

Because anthracite, bituminous, and lignite coal have different markets and different transportation needs, separate sections of the report will be devoted to these different classes of coal. Subchapter A will be devoted to the freight rate structure and movement of bituminous coal, which from the overall economic standpoint is the most important of the classes of coal. Subchapters B and C will cover the rate structure and movement of lignite and anthracite coal, respectively.

As previously noted, the economic statistics of lignite are sometimes included in the bituminous coal statistics, and for this reason there will be some variances in the various statistics used. The inclusion of lignite statistics does not significantly affect the reliability of the data or conclusions drawn therefrom.

SUBCHAPTER A – RATE STRUCTURE AND MOVEMENT OF BITUMINOUS COAL

1. *Domestic Market for Coal*

Vast changes have occurred in recent years in the consumption of bituminous coal. At the end of World War II, the railroads shifted from coal-fired steam locomotives to diesel. During the same period, coal furnaces for heating purposes in homes and industry were being replaced by furnaces fired by oil, gas, or electricity. These two factors led to a decline of 36 percent in coal production between 1947 and 1962. Broadly speaking, the two main markets of coal today are for generation of electric power and for production of coke used in making steel. These two markets presently account for 83 percent of coal consumption. By 1985, these two uses are expected to comprise about 92 percent of the demand for coal, unless new methods are developed for the conversion of coal to gas or liquid fuel.

(1) *Electric Utilities*–In 1971, United States production of bituminous coal totaled 553,123,000 tons. Of this amount, 341,694,000 tons or approximately 62 percent was used by electric utilities. Table 4 shows the annual consumption of fossil fuels by electric utility power plants for the years 1961 through 1971. Over that ten-year span, electric utility demand for coal increased nearly 90 percent.

Natural gas is almost the exclusive fuel used in the West South central region, which is also the major gas producing district. Natural gas is a major market factor in the West North central, Mountain, and Pacific States. Usage in other regions is greater in the summer, when heating demand is low and gas transmission companies offer utilities reduced prices to utilize pipeline

TABLE 4

Annual Consumption of Fossil Fuels by Electric Utility Power Plants, 1961-1971

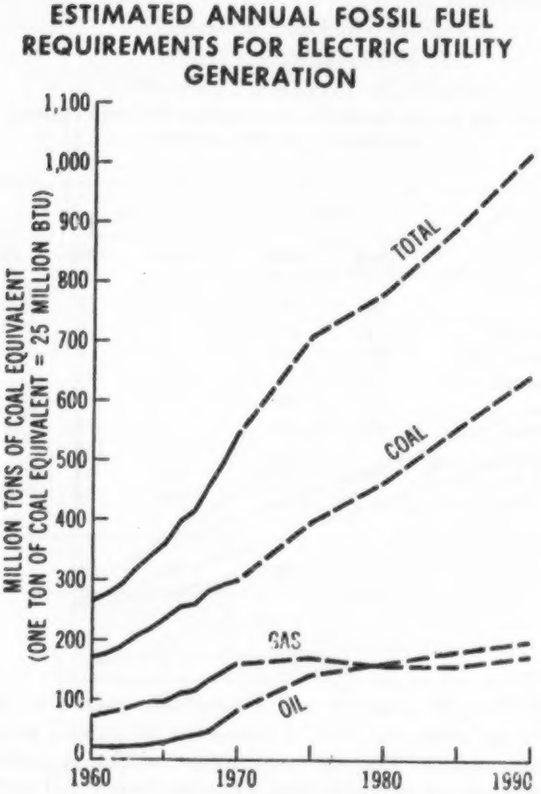
Year	Conventional Units[1]			Percent of Total		
	Coal	Gas	Oil	Coal	Gas	Oil
1961....	182.1	1,825.1	85.7	64.1	28.0	7.9
1962....	193.2	1,966.0	85.8	64.1	28.4	7.5
1963....	211.3	2,144.5	93.3	64.2	28.4	7.4
1964....	225.4	2,322.9	101.1	63.7	28.7	7.6
1965....	244.8	2,321.1	115.2	64.9	27.0	8.1
1966....	266.5	2,609.9	140.9	63.6	27.5	8.9
1967....	274.2	2,746.4	161.3	62.5	27.7	9.8
1968....	297.8	3,147.9	188.6	61.1	28.6	10.3
1969....	310.3	3,486.4	250.9	58.4	29.0	12.6
1970....	322	3,894	332	55.1	29.7	15.2

[1] In millions of tons of coal, millions of barrels of oil, and millions Mcf (thousands of cubic feet) of gas.

capacity. Some domestic fuel oil is used in various oil producing districts, but a major part of the oil used is imported residual fuel oil, which is transported by water to both the east and west coasts. Virtually no coal is used on the west coast because of high transportation costs and the availability of hydroelectric power, but electric power generated at coal-fired plants in the Mountain States is transported by extra-high-voltage lines.

The market position of coal relative to oil and gas seems likely to improve substantially over the next 20 years. In 1970, approximately 322 million tons of coal were burned for thermal power generation, representing 55.1 percent of the fossil fuels consumed by electric utility power plants. By 1990, annual power plant coal consumption is expected to reach 700 million tons or 63.3 percent of the fossil fuels consumed. Figure B shows the predicted trend in annual fossil fuel requirements for electric utility generation.

FIGURE B



ESTIMATED ANNUAL FOSSIL FUEL REQUIREMENTS FOR ELECTRIC UTILITY GENERATION

Table 5 shows the fossil fuel used for electric power generation by census regions as a percent of total BTU's for the years 1960 and 1969.

TABLE 5

Fossil Fuel Use for Electric Power Generation by Census Regions, as a Percent, for 1960 and 1969

Region	Coal		Gas		Oil	
	1960	1969	1960	1969	1960	1969
New England	58	23	5	2	37	75
Middle Atlantic	78	57	8	9	14	34
East Northcentral	96	93	4	6	....	1
West Northcentral	47	55	52	44	1	1
South Atlantic	77	70	15	13	8	17
East Southcentral	92	89	8	11	....	....
West Southcentral	....	....	100	100	....	....
Mountain	26	55	65	42	8	3
Pacific	....	....	68	83	32	17
U.S. Average	66	58	26	29	8	13

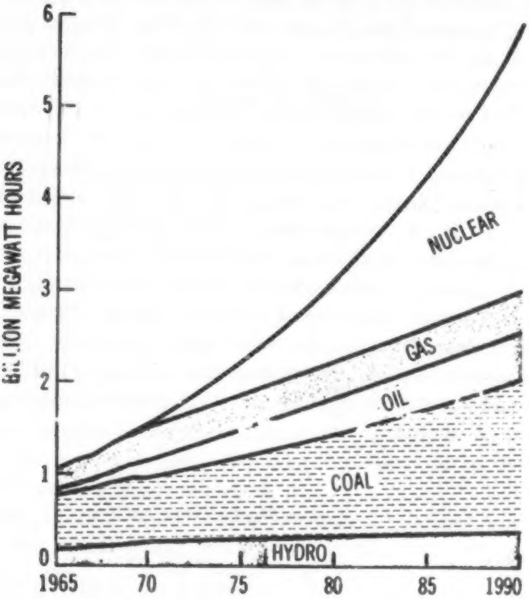
Currently, nuclear power is not a significant factor in the overall generation of electricity. In 1971, it accounted for about 2 percent of the installed steam capacity. However, a significant increase in nuclear electric generation is projected by 1990. Figure C taken from Part I of "The 1970 National Power Survey - Federal Power Commission" shows the estimated annual electric utility generation by primary energy sources to 1990. Nuclear electric generation is estimated at 50 percent of total electric generation.

The chief advantages of nuclear power are lower costs and less air pollution. Nuclear plants do not require transportation of bulky fuels, so location close to fuel supplies is not important.

Major uncertainties concerning nuclear power still exist. For one thing, operating problems with present installed facilities have resulted in a slowdown in construction of additional facilities and have revived interest in fossil fuels. Second, difficulties over sites and permits reflect the public's concern over safety and possible water pollution. An estimate of the Atomic Energy Commission made in 1974 of nuclear power generation through 1990

FIGURE C

ESTIMATED ANNUAL ELECTRIC UTILITY GENERATION BY PRIMARY ENERGY SOURCES



is as follows: 0.217 billion megawatt hours in 1975; 0.570 billion megawatt hours in 1980; 1.397 billion megawatt hours in 1985; and 2.719 billion megawatt hours in 1990. In the circumstances it appears that greater reliance will be placed upon fossil fuels for electric utility generation than that shown in Figure C.

(2) *Steel Industry.*–The second largest market for coal is the steel industry, which consumes over 90 percent of coking coal (excluding exports). In 1970, by-product ovens and beehive ovens received 96,481,000 tons of coal for conversion into coke and by-products. Coals from eastern fields varying in volatile content are blended by steel companies and then carbonized into coke for use in blast furnaces, which separate iron from the major impurities contained in iron ore. Under present technology, coal is indispensable for large scale, economic production of most steel grades, but

gains in blast furnace efficiency have significantly reduced the amount of coal needed in the steelmaking process.

Further reductions in coal usage per ton of pig iron produced seem inevitable, reflecting increased availability of concentrated iron ores and gains in blast furnace efficiency stemming largely from injection of lower cost fuels (oil, gas, or powdered coal) in the furnace. In addition, the growing use of basic oxygen furnaces bodes ill for coal, for these furnaces utilize a larger proportion of pig iron relative to scrap than do open hearth furnaces. Further in the future is the direct reduction of iron ore which is only in the pilot stage at present. This would further reduce consumption of coking coal. Coal is also used by the steel companies for heat and power, but this usage accounts for less than 10 percent of the industry's consumption. Many steel and coke producers operate their own mines. Of the coal consumed for coke production in 1970, 56.7 percent was received from captive mines.

(3) *Industrial Users.*—Reflecting the increased availability of natural gas and fuel oil in the past, consumption by merchant (nonsteel) coke producers of metallurgical grades and demand for steam coal by other industrial users has been in a general decline for some years. Substantial improvement is possible in certain markets, however, highlighted by expansion of cement production and also the use of steam plants for producing electric power used by aluminum companies.

2. *Export Market for Coal*

Metallurgical grades account for approximately two-thirds of U.S. exports of coal, and the cyclical nature of demand for this type of coal is made more volatile by changes in shipping rates, import restrictions, and foreign exchange considerations.

In recent years, Japan has surpassed Canada as the largest single foreign market for U.S. coal and is likely to retain that position for some time to come. The sharp rise in demand reflects Japan's very rapid growth in steel production and limited domestic supplies. Further expansion in demand for coking grades from Japan is indicated in the years ahead, chiefly reflecting that nation's plans to expand steel production to 120 million tons annually by 1975, from 97.6 million tons in 1971. Japanese firms have entered into a number of contracts for the purchase of coal in the late 1970's and early 1980's.

Prior to 1969, Canada had been the largest customer for U. S. coal. However, with the increasing development of oil and natural gas resources and of pipeline networks, Canadian dependence on coal imports has lessened.

Total export shipments hit a peak in 1957, reflecting the fuel shortages stemming from the Suez crisis, but dropped sharply thereafter. Shipments generally trended upward after 1960, reaching a record 70.9 million tons in 1970. In that year about 35 percent was shipped to Japan, 31 percent to Canada, 29 percent to Europe, and the balance to various countries in Asia and South America. In 1971 coal exports dropped 20 percent from the 1970 level, with the value of the total 1971 export tonnage being $891.9 million.

3. *Mining Operations*

The two main types of mining methods used in the United States are underground mining and strip mining. In underground mining, coal is cut, blasted loose with explosives or compressed air, loaded on conveyors or cars, and carried up to the surface. In underground production, generally about 50 percent of the coal is left to support mine roofs; in some areas, better roof conditions allow removal of more than 80 percent of the coal.

Strip (open pit) mining consists of removing overburden from coal seams relatively close to the surface with huge electric shovels capable of moving up to 140 cubic yards of dirt and rock in one bite. The coal is usually loosened by explosives. Smaller power shovels load the coal into trucks for removal to preparation plants or customers. Output of strip mines during the past decade has displayed a moderate upward trend.

From 1962 to 1969, strip mining production increased at a much faster rate than did underground mining. In 1968, both strip mining and underground mining declined slightly, both increasing again in 1969, strip mining by 11.2 million tons and underground mining by slightly less than 3 million tons. In 1970 and 1971, strip mining increased while underground mining decreased. In the latter year about 50 percent of the 552 million tons of coal mined was supplied by underground mines, while strip mines accounted for the other 50 percent of output.

The regional distribution of underground coal mine production is highly concentrated. The Eastern Region produces the most coal in underground mines. The leading production States of this region are West Virginia, Pennsylvania, and Eastern Kentucky. The Western Region produces the smallest amount of coal by underground mining; Kansas and Nebraska produce all their coal from strip mines.

Because of the high recovery rate and low cost of operations, strip mining is generally preferred by producers whenever possible. Conservationists, however, contend that surface mining leaves the land scarred and unusable for many years thereafter. Reclamation efforts, although undertaken by several producers, are acknowledged by industry and environmentalists as

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being difficult. Legal efforts in Kentucky and West Virginia and some western States to impose bans on surface mining have been only partially successful. The Congress is presently considering legislation which would limit such mining. This legislation is discussed in greater detail in Part V hereof.

4. *Air Pollution*

Increasing concern over air pollution has brought mounting pressure on electric utilities to abandon the use of high-sulfur coal and to switch to low-sulfur fuel oil or natural gas. The Federal Clean Air Act of 1970 calls for primary air standards to be put in effect by 1975, and much tougher secondary standards to be implemented in a "reasonable" time thereafter. The Environmental Protection Agency has established air quality standards that in effect prohibit the use of Appalachian coal with more than 0.7 percent sulfur in any new power plants. The original deadline for old power plants to meet these standards was July 1, 1975. However, the Congress is presently considering revisions to the Act which would relax these standards somewhat. The original standards, if enforced, would have made almost half of the Nation's coal production unusable.

Several states have established standards which are more rigorous than those of the Federal Government. Coal already has been driven out of most of the big East Coast utility markets – at a cost of 45 million tons of production. New York City, for instance, restricts sulfur emissions to 0.3 percent, and virtually no U. S. coal can meet that standard. However, much of the market lost by coal could be easily reclaimed as the Federal Power Commission recently said that 44 percent of the electrical utility plants now burning oil could quickly switch back to using coal in their boilers.

The bulk of U. S. low sulfur (1% or less) coal reserves is located in Colorado, Montana, Wyoming, and North Dakota. Western coals, however, are primarily of the sub-bituminous and lignite types and thus have a lower heat content. Because of this, air quality standards for new electric plants burning these coals are set to less than 0.5 percent sulfur.

In the East, smaller reserves of low sulfur bituminous coal are located in West Virginia and the eastern parts of Kentucky.

Several methods have been proposed to get around the sulfur problem: stack-gas scrubbers, conversion of coal to low BTU gas, and conversion of high sulfur coal to sulfur-free coal or oil. None of these are commercially feasible at present. In Table 6 are shown U. S. coal reserves by type and sulfur content.

TABLE 6

Estimated Remaining Coal Reserves of the United States by Type, Sulfur Content, and State, on January 1, 1965[1]

[Millions of Short Tons]

Coal Type and State	Sulfur Content, %				
	0.7 or Less	0.8-1.0	1.1-1.5	Over 1.5	Total
Bituminous Coal					
Alabama	889.2	1,189.3	5,421.7	6,077.6	13,577.8
Alaska	20,287.4	1,100.0	....	....	21,387.4
Arkansas	......	......	1,128.4	487.4	1,615.8
Colorado	25,178.3	37,237.2	....	....	62,415.5
Georgia	....	76.9	....	....	76.0
Illinois[2]	....	......	1,808.0	137,948.0	139,756.0
Indiana	197.5	173.0	3,645.2	30.825.4	34,841.1
Iowa	....	....	....	6,522.5	6,522.5
Kansas	....	....	519.9	20,218.1	20,738.0
Kentucky					
West	....	....	1,119.6	35,775.8	36,895.4
East	13,639.9	8,491.9	2,286.8	4,996.2	29,414.8
Maryland	....	....	....	1,180.0	1,180.0
Michigan	....	....	....	205.0	205.0
Missouri	....	....	....	78,760.0	78,760.0
Montana	51.2	218.2	205.0	1,632.2	2,104.6
New Mexico ...	5,212.0	5,474.0	....	....	10,686.0
North Carolina .	....	....	....	110.0	110.0
Ohio	....	611.0	369.0	41,044.0	42,024.0
Oklahoma	250.6	772.2	825.0	1,455.0	3,302.8
Oregon	....	14.0	....	....	14.0
Pennsylvania ...	44.0	1,154.4	7,624.4	49,128.7	57,951.5
Tennessee	3.3	160.9	715.9	959.4	1,839.5
Texas	....	....	....	7,978.0	7,978.0
Utah	8,551.4	13,584.0	....	5,522.6	27,658.0
Virginia	1,981.5	6,077.5	1,637.1	123.9	9,820.0
Washington	898.9	672.1	....	....	1,571.0
West Virginia ..	20,761.0	26,710.6	21,819.7	33,375.1	102,666.4
Wyoming	6,222.2	6,596.6	....	1.1	12,819.9
Other States ...	....	616.0	....	....	616.0
Total	104,168.4	110,928.9	49,125.7	464,324.0	728,546.0
Percent of total .	14.314.3	15.2	6.7	63.8	100.0
Subbituminous Coal[3]					
Total	256,616.3	130,586.3	150.5	1,312.3	388,665.4
Percent of total .	66.0	33.6	0.1	0.3	100.0
Lignite[4]					
Total	344,623.6	61,388.5	41,164.5	464.7	447,641.3
Percent of total	77.0	13.7	9.2	0.1	100.0
Anthracite[5]					
Total	14,652.0	96.0	....	431.8	15,179.8
Percent of total .	96.996.5	0.6	....	2.9	100.0
Grand total ..	720,060.3	302,999.7	90,440.7	466,532.8	[6]1,580,033.5
Percent of total .	45.6	19.2	5.7	29.5	100.0

[1] Data is from U. S. Bureau of Mines' Circular 8312 dated 1966 except for Illinois. The table includes coal in seams at least 14 inches thick and less than 3,000 feet deep in explored areas. Approximately one-half of these reserves are considered recoverable.

[2] Data from Illinois State Geological Survey Circular 432 dated 1968. 1966 Data.

[3] Nearly 80 percent in the Rocky Mountain area and most of the remainder in Alaska.

[4] Practically all in North Dakota and Montana.

[5] Over 80 percent in Pennsylvania and most of the remainder in Alaska.

[6] Revised in 1967 by the U. S. Geological Survey to 1,559,875 million tons.

5. *Importance of Transportation Costs*

Because of its bulk, the cost of transporting coal has historically been an important part of the total cost to the consumer. This relationship, however, has not remained constant and today rail transportation costs are of declining importance in the marketing of coal. In 1932 rail rates amounted to 63.3 percent of the destination value of bituminous coal. By 1973 rail rates had declined to 30.4 percent of the destination value. This decline in the importance of transportation costs has tended to lessen the importance of location in competition between coal producing regions. The most important competitive factor in the utilities market is the final price per BTU. This price may vary greatly depending not only on the amount of transportation required but also upon the production methods used, the type of coal produced, and the type and amount of labor used. In Table 7 below is a comparison of f.o.b. mine realization prices and railroad rates from 1931 through 1972.

TABLE 7

Comparison of F.O.B. Mine Realization and Railroad Rates on Bituminous Coal - United States 1931 Thru 1972

Year	U. S. Coal Production (Million Tons)	Average Realization Coal F.O.B. Mine	Average Rail Rates	Total	% of Destination Value	
					Coal	Rail Rates
1931	382.1	$1.54	$2.22	$3.76	41.0	59.0
1932	309.7	1.31	2.26	3.57	36.7	63.3
1933	333.6	1.34	2.20	3.54	37.9	62.1
1934	359.4	1.75	2.15	3.90	44.9	55.1
1935	372.4	1.77	2.24	4.01	44.1	55.9
1936	439.1	1.76	2.25	4.01	43.9	56.1
1937	445.5	1.94	2.17	4.11	47.2	52.8
1938	348.5	1.95	2.27	4.22	46.2	53.8
1939	394.9	1.84	2.23	4.07	45.2	54.8
1940	460.8	1.91	2.22	4.13	46.2	53.8
1941	514.1	2.19	2.22	4.41	49.7	50.3
1942	582.7	2.36	2.31	4.67	50.5	49.5
1943	590.2	2.69	2.30	4.99	53.9	46.1
1944	619.6	2.92	2.21	5.13	56.9	43.1
1945	577.6	3.06	2.20	5.26	58.2	41.8

TABLE 7 (cont.)

Comparison of F.O.B. Mine Realization and Railroad Rates on Bituminous Coal - United States 1931 Thru 1972

Year	U.S. Coal Production (Million Tons)	Average Realization Coal F.O.B. Mine	Average Rail Rates	Total	% of Destination Value	
					Coal	Rail Rates
1946	533.9	3.44	2.27	5.71	60.2	39.8
1947	630.6	4.16	2.49	6.65	62.6	37.4
1948	599.5	4.99	2.74	7.73	64.6	35.4
1949	437.9	4.88	3.00	7.88	61.9	38.1
1950	516.3	4.84	3.09	7.93	61.0	39.0
1951	533.7	4.92	3.16	8.08	60.9	39.1
1952	466.8	4.90	3.35	8.25	59.4	40.6
1953	457.3	4.92	3.33	8.25	59.6	40.4
1954	390.2	4.51	3.23	7.74	58.3	41.7
1955	464.6	4.50	3.24	7.74	58.1	41.9
1956	500.9	4.82	3.45	8.27	58.3	41.7
1957	492.7	5.08	3.57	8.65	58.7	41.3
1958	410.4	4.86	3.58	8.44	57.6	42.4
1959	412.0	4.77	3.45	8.22	58.0	42.0
1960	415.5	4.69	3.40	8.09	58.0	42.0
1961	402.9	4.58	3.40	7.98	57.4	42.6
1962	422.1	4.48	3.32	7.80	57.4	42.6
1963	458.9	4.39	3.21	7.60	57.8	42.2
1964	486.9	4.45	3.11	7.56	58.9	41.1
1965	512.0	4.44	3.13	7.57	58.7	41.3
1966	533.8	4.54	3.01	7.55	60.1	39.9
1967	552.6	4.62	3.00	7.62	60.6	39.4
1968	545.2	4.67	3.01	7.68	60.8	39.2
1969	560.5	4.99	3.10	8.09	61.7	38.3
1970	602.9	6.26	3.41	9.67	64.7	35.3
1971	552.2	7.07	3.70	10.77	65.6	34.4
1972	595.0	7.53	3.67	11.20	67.2	32.8

Table 8 below shows the recent substantial increases in prices of coal:

TABLE 8

Comparison of Selected Coal Prices

Producer Or Consumer	Date	Price Per Ton	Increase Per Ton	
			Amount	Percent
	Jan. 1973	$15.50	–	
	Oct. 1973	17.50	$ 2.00	12.9
Eastern Utility	Feb. 1974	25.00	9.50	61.3
	1968	$ 5.00-$ 6.00	–	
Detroit Edison	1974	$10.00-$12.00	$ 5.00 - $6.00	100.0
Buchanan County,	1973	$ 6.00-$ 7.00		
Va.	1974	$35.00	$29.00-$28.00	483-400
Export	Jan. 1973	$14.97	–	
Metallurgical	Jan. 1974	$29.00	$14.03	93.7
Consumers Power	Jan. 1973	(1) $9.97		
Co.	Jan. 1974	(1) $12.76	$ 2.79	28.0
Consumers Power	Jan. 1973	(2) $12.00-$13.00	–	
Co.	Jan. 1974	(2) $25.00-$30.00	$13.00-$17.00	108-131
Virginia Elec.	Jan. 1973	$16.73	–	
Power Co.	Jan. 1974	$27.40	$10.67	63.8
Potomac Elec.	Jan. 1973	$13.08	–	
Power Co.	Jan. 1974	$23.80	$10.72	82.0

(1) Average delivered price
(2) Spot purchases of low-sulfur coal

6. *Movement of Bituminous Coal From the Mines*

At present, water carriers transport about 11 percent of coal traffic. A single tow of 20 barges can carry 20,000 to 30,000 tons of coal. Coal is a major item of traffic along the Ohio River and its tributaries. Coal also moves down the Mississippi River, and large tonnages are transferred near the river mouth to ocean-going barges which cross the Gulf of Mexico to power plants in Florida. Barge lines are also linked to rail loading points in an efficient, integrated transportation network, so that coal which moves part way to market by water may move to its ultimate destination by rail. More than 100 million tons of coal in the United States presently move each year over rivers. The Great Lakes are another waterway for coal. Lake Erie ports like Toledo and Sandusky receive coal, mostly by rail, and load it into freighters for consumers in Canada or for U. S. destinations on the upper Lakes, such as Duluth, Minn. At Norfolk and Newport News, Va., supercolliers built especially for this trade take on as much as 100,000 tons of coal in a matter of hours for delivery to destinations as distant as Japan. In Map Number II are shown major eastern waterways over which coal moves and their proximity to the coal mines.

MAP NUMBER II

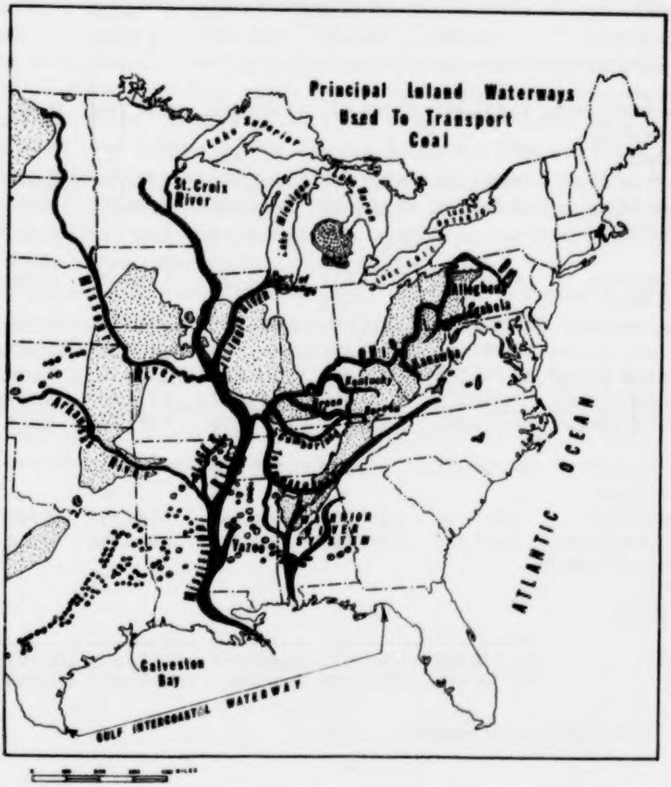

Principal Inland Waterways Used To Transport Coal
Lake Superior
St. Croix River
Lake Michigan
Lake Huron
Lake Ontario
Lake Erie
Missouri River
Illinois River
Allegheny
Monongahela
Ohio
Kanawha
Kentucky
Green
Cumberland
Tennessee
Arkansas River
Mississippi
Yazoo
Warrior River System
Galveston Bay
Gulf Intercoastal Waterway
Atlantic Ocean

Table 9 shows the bituminous coal tonnage moved by barge for the years 1966 - 1970, by shipping area.

TABLE 9

Domestic Inland Water Movements of Bituminous Coal, by Shipping Area

(Net Tons)

Shipping Area	1966	1967	1968	1969	1970
Allegheny River	2,595,249	2,112,274	1,737,999	1,823,846	1,476,072
Arkansas River	-	-	-	-	9,041
Black River	-	-	-	4,039	-
Cumberland River	110,980	166,650	128,250	159,600	72,900
Galveston Bay	-	-	-	-	875
Green & Barren Rivers	11,655,995	13,506,028	15,809,522	15,325,846	16,664,317
Gulf Intracoastal Waterway	-	-	1,481	-	1,164
Illinois River	6,069,520	5,323,075	4,836,856	4,716,989	6,090,937
Kanawha River	7,834,848	8,023,564	7,468,108	7,159,403	7,373,062
Lake Michigan	-	195	-	-	-
Mississippi River	6,611,201	7,001,331	7,353,150	6,388,574	6,636,141
Missouri River	-	890	-	-	-
Monongahela River	27,859,103	29,040,344	26,984,871	28,384,291	30,966,508
Ohio River	23,899,122	25,309,654	25,467,924	28,335,318	27,187,473
Huntington District	12,142,043	11,090,461	11,262,646	10,230,382	9,688,273
Louisville District	8,161,278	8,295,421	7,150,442	9,113,489	9,127,838
Pittsburgh District	3,595,801	5,923,772	7,054,836	8,991,447	8,371,362
Port of Chicago	21,635	74,898	2,315	1,375	7,463
St. Croix River	-	365	593	5,996	-
Tennessee River	4,063,781	4,694,873	4,956,655	5,283,399	5,509,102
Warrior River System	2,557,475	2,799,883	2,940,209	4,090,926	4,198,023
Williamette & Yamhill Rivers	-	-	-	71	-
Yazoo River	-	-	-	-	-
Total	93,278,909	98,055,622	97,687,933	101,679,673	106,193,078

Source: U.S. Army Corps of Engineers

Trucks also carry millions of tons of coal – about 11 percent of all coal is transported over public highways. Trucks are the prime method of moving coal from strip mines to preparation plants, rail or water loading points, or mine-mouth electric generating stations. Some off-highway motor vehicles, with power units at each end, carry 240 tons of coal. In Table 10 is shown the tonnage of bituminous coal shipped by truck for the years 1966 - 1970.

Conveyor belts deliver coal for distances as much as 10 miles. One system in operation in western Kentucky is designed to carry about 140,000 tons of coal a week from mines to a barge loading dock on the Ohio River. River tows take the coal to a power plant.

The transportation of coal by pipeline is in slurry form. This consists of mixed water and finely ground coal. At the present time there is only one coal-slurry pipeline operating in the United States. This pipeline is 275 miles long and is the longest coal-slurry pipeline in the world. It connects the Black Mesa, Ariz., coal fields with a thermal power plant on the Colorado River in Nevada.

The alternative to delivering coal to market is mine-mouth power plants. A cluster of these generating plants in western Pennsylvania sends power to markets as distant as New York City, using 500,000-volt lines. Other mine-mouth power plants in West Virginia, Kentucky, Ohio and other States use coal from nearby mines to generate power for distant markets. In the West, where coal reserves are rich but remote from electrical load centers, high-voltage lines send coal-generated electricity from the Four Corners area of New Mexico to consumers in southern California.

The great preponderance of coal – over 60 percent – moves by rail. The railroads derive more revenue from it than any other commodity – over $1.2 billion annually, or about 10 percent of their total freight revenue. Over 20 percent of all coal mined moves in unit trains. A unit train carries 4,000 to 10,000 tons of coal, though some carry as much as 15,000 tons. Each car in a unit train may hold 100 tons or more. Sometimes the mine or the power company owns the cars, and the railroads supply only the locomotives and crews.

TABLE 10

Truck Shipments of Bituminous Coal, by Origin States

(Thousands of Net Tons)

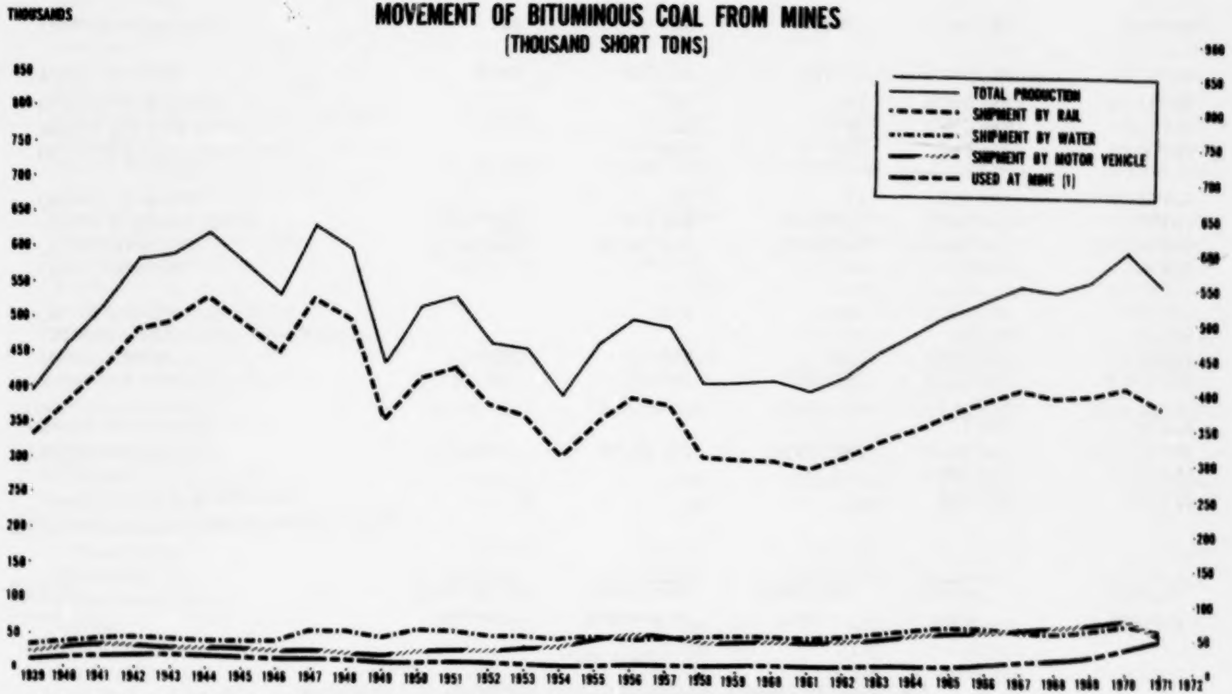
State	1966	1967	1968	1969	1970
Alabama	2,318	2,453	2,416	2,821	5,029
Alaska	10	8	4	3	3
Arizona	-	1	-	-	-
Arkansas	-	-	3	3	11
Colorado	1,273	1,344	1,298	1,179	1,236
Georgia	-	-	-	-	-
Illinois	5,581	5,241	5,677	6,110	6,844
Indiana	2,212	2,414	2,352	2,884	3,304
Iowa	315	261	264	306	350
Kansas	26	120	23	29	45
Kentucky	12,850	9,443	8,950	10,920	12,175
Maryland	523	558	640	360	878
Missouri	445	382	346	447	760
Montana	49	41	35	37	31
New Mexico	2,026	2,451	2,278	3,200	7
North Dakota	368	387	315	378	568
Ohio	12,628	13,720	13,129	13,909	15,255
Oklahoma	20	15	9	16	71
Pennsylvania	16,467	15,101	15,261	15,504	17,518
South Dakota	10	5	-	-	-
Tennessee	2,090	2,144	2,204	2,491	3,895
Utah	411	425	421	393	380
Virginia	4,823	2,802	2,241	1,316	1,656
Washington	40	41	168	48	37
West Virginia	2,492	2,593	3,668	3,625	3,877
Wyoming	49	54	51	48	45
Total U. S.	67,026	62,003	61,753	66,030	73,977

Source: U. S. Bureau of Mines

FIGURE D

MOVEMENT OF BITUMINOUS COAL FROM MINES

(THOUSAND SHORT TONS)



1 Includes coal used by mine employees, taken by locomotive tenders at tipple, used at mine for power and heat, coal transported from mine to point of use by conveyor or tram, coal made into beehive coke at mine, and all other uses at mine. For 1971, includes 47,727,000 tons used at mine-mouth generating plants.

Source: National Coal Association, "How Bituminous Coal Moves From Mines," Bituminous Coal Facts 1972, (Washington: National Coal Association, 1972), p. 91.

TABLE 11

Bituminous Coal Handled by Class I Railroads and Revenue Received, 1971

(Net Tons)

Railroad	Orig. and Term. on Line	Delivered to Connections	Total Originated	Total Carried[a]	Revenue Received
EASTERN DISTRICT (Incl. Pocahontas Reg.)					
Akron, Canton & Youngstown	-	-	-	231,518	$ 227,926
Ann Arbor	-	-	-	1,864,442	1,365,915
Baltimore & Ohio	9,874,306	20,788,761	30,663,067	39,788,293	107,017,544
Bangor & Aroostook	-	-	-	12,862	47,773
Bessemer & Lake Erie	167,692	3,352,645	3,520,337	9,798,476	16,212,555
Boston & Maine	104	468	572	1,019,154	1,808,623
Canadian Pacific (Lines in Maine)	-	-	-	1,624	3,365
Central Railroad of New Jersey	-	685	685	2,214,919	1,524,856
Central Vermont	-	-	-	71,617	141,830
Chesapeake & Ohio	23,984,041	26,302,803	50,286,844	60,089,141	189,291,004
Chicago & Eastern Illinois	1,832,037	519,794	2,351,831	2,948,346	5,415,103
Delaware & Hudson	-	45	45	560,144	1,233,973
Detroit & Toledo Shore Line	-	400	400	1,382,331	1,180,054
Detroit, Toledo & Ironton	-	66	66	1,815,842	1,843,674
Elgin, Joliet & Eastern	-	226	226	9,288,558	9,411,306
Erie-Lackawanna	8,463	473,716	482,179	4,290,929	9,628,588
Grand Trunk Western	67	50	117	1,242,185	1,696,643

Illinois Terminal	-	-	-	1,467,478	440,776
Lehigh Valley	-	1,899	1,899	1,611,942	2,301,666
Long Island	-	-	-	119,557	231,217
Maine Central	-	-	-	22,962	42,269
Missouri-Illinois	1,214,173	494,347	1,708,520	2,078,951	1,853,988
Monongahela	-	6,718,061	6,718,061	6,718,061	6,061,697
Norfolk & Western	41,116,789	23,643,697	64,760,486	73,014,940	268,424,202
Penn Central	25,251,582	14,507,208	39,758,790	80,595,668	208,595,568
Penna-Reading Seashore Lines	115,280	-	115,280	721,619	1,125,704
Pittsburgh & Lake Erie	1,469,223	696,588	2,165,811	5,633,696	7,516,993
Reading	-	3,216	3,216	11,246,485	18,089,244
Richmond, Fredericksburg & Potomac	-	-	-	258,603	386,218
Western Maryland	2,779,165	3,379,349	6,158,514	12,107,526	15,269,183
Total Eastern District	107,812,922	100,884,024	208,696,946	332,217,869	$878,389,457
SOUTHERN DISTRICT					
Alabama Great Southern	259,123	5,592	264,715	2,235,856	2,463,594
Central of Georgia	78	28	106	3,137,564	4,166,960
Cincinnati, New Orleans & Texas Pacific	552,664	366,271	918,935	4,218,192	4,387,172
Clinchfield	2,528,601	4,143,699	6,672,300	14,308,524	20,583,594
Florida East Coast	-	-	-	-	-
Georgia	522	80	602	2,659,646	$ 3,670,671
Georgia Southern & Florida	-	1,138	1,138	89,460	113,426
Gulf, Mobile & Ohio	2,652,395	2,475,923	5,128,318	6,079,889	7,152,911
Illinois Central	15,106,354	8,151,465	23,257,819	23,750,434	44,996,482

TABLE 11 (cont.)

Railroad	Orig. and Term. on Line	Delivered to Connections	Total Originated	Total Carried[a]	Revenue Received
SOUTHERN DISTRICT - cont'd					
Louisville & Nashville (Monon)	21,613,217	27,553,459	49,166,676	51,119,189	107,373,642
Norfolk Southern	519	-	519	442,251	901,418
Seaboard Coast Line	2,136	618	2,754	17,357,096	26,399,324
Southern	9,546,410	2,469,272	12,015,682	25,644,161	48,000,460
Total Southern District	52,262,019	45,167,545	97,429,564	151,042,262	$270,209,654
WESTERN DISTRICT					
Atchison, Topeka & Santa Fe	1,109,372	302,002	1,411,374	3,806,774	8,448,149
Burlington Northern	13,774,586	7,142,679	20,917,265	23,240,637	68,568,155
Chicago & North Western	2,497,243	523,191	3,020,434	8,713,636	18,001,477
Chicago, Milwaukee, St. Paul & Pacific	2,731,137	356,710	3,087,847	5,067,490	10,408,407
Chicago, Rock Island & Pacific	511,001	967,950	1,478,951	2,328,084	3,915,216
Colorado & Southern	-	8	8	137,839	200,752
Denver & Rio Grande Western	4,173,543	2,622,040	6,795,583	8,495,255	13,544,755
Duluth, Missabe & Iron Range	499,245	74,932	574,177	995,507	1,036,338
Duluth, Winnipeg & Pacific	-	1,439	1,439	37,976	79,373
Fort Worth & Denver	-	26	26	17,754	51,799
Green Bay & Western	23,956	8,488	32,444	154,258	198,607
Kansas City Southern (L&A)	173,422	114,090	287,512	761,275	1,969,102

Lake Superior & Ishpeming	-	-	-	459,258	440,645
Missouri-Kansas-Texas	618,810	608,798	1,227,608	1,252,770	1,474,129
Missouri Pacific	3,459,781	769,494	4,229,275	5,007,803	6,479,100
Northwestern Pacific	-	40	40	220	984
St. Louis - San Francisco	503,175	1,778,001	2,281,176	2,294,404	4,232,580
St. Louis Southwestern	149	199	348	820	6,947
Soo Line	132,572	235,659	368,231	890,548	1,814,811
Southern Pacific	30,732	15,938	46,670	418,094	2,085,560
Texas & Pacific (Including KO&G)	349	173,550	173,899	233,673	393,764
Toledo, Peoria & Western	153,981	66	154,047	1,287,337	730,272
Union Pacific	1,213,061	1,525,681	2,738,742	6,081,203	21,736,044
Western Pacific	-	30	30	169,617	420,633
Total Western District	31,606,115	17,221,011	48,827,126	71,852,232	$166,237,599
Total United States	191,681,056	163,272,580	354,953,636	555,112,363	$1,314,836,710

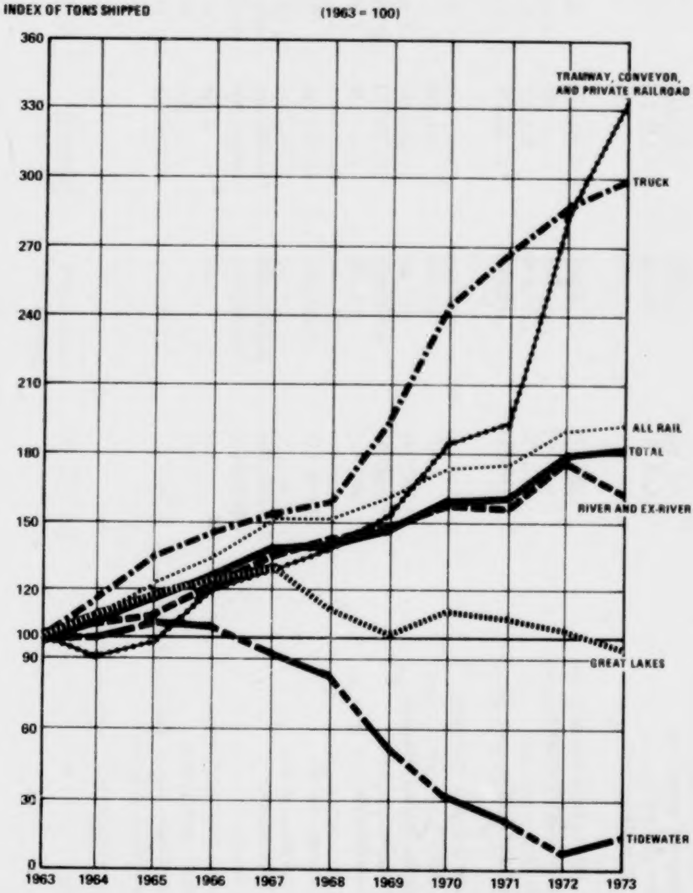
[a]–Includes duplications.

Source: Association of American Railroads.

Figure E is an index from 1963 to 1973 showing increases and decreases in the transportation of bituminous coal and lignite to electric utilities by (1) tramway, conveyor, and private railroad, (2) truck, (3) all-rail, (4) river and ex-river, (5) Great Lakes, and (6) Tidewater, with certain exclusions. Figure F shows the same index for movements to coke and gas plants.

FIGURE E

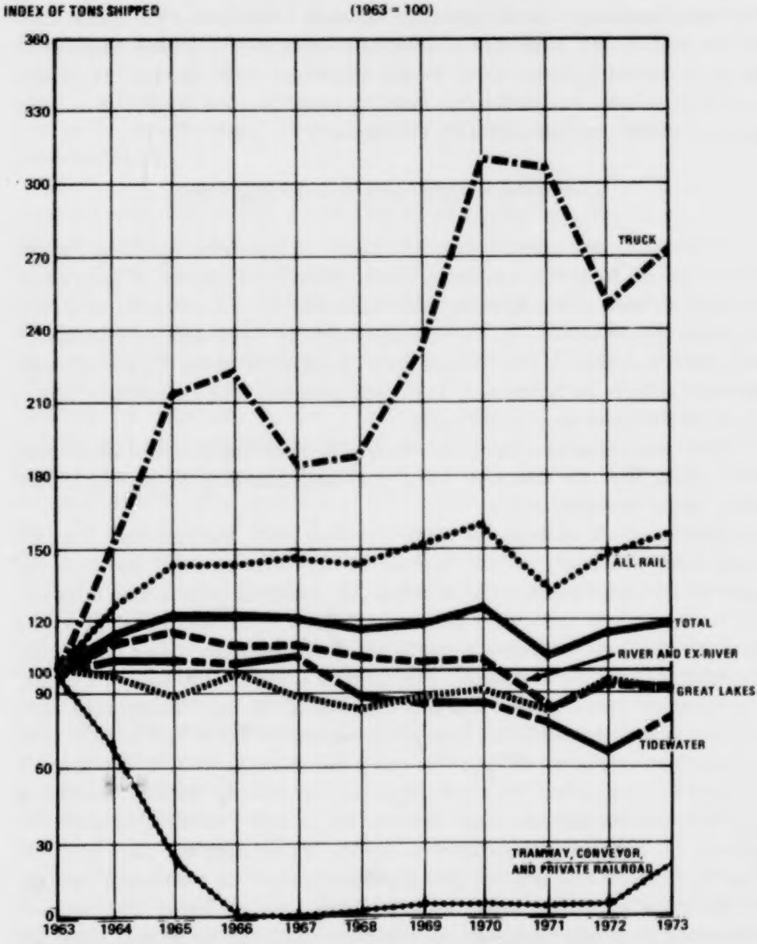
Index showing increases and decreases from 1963 to 1973, by method of movement, of bituminous coal and lignite moving to electric utilities. [1]



[1] Excluded railroad fuel, Canadian Great Lakes commercial docks, U.S. Great Lakes and Tidewater dock storage, coal used at mines and sales to employees, net change in inventory, and overseas exports.

FIGURE F

Index showing increases and decreases from 1963 to 1973, by method of movement, of bituminous coal and lignite moving to coke and gas plants. [1]



[1] Excluded railroad fuel, Canadian Great Lakes commercial docks, U.S. Great Lakes and Tidewater dock storage, coal used at mines and sales to employees, net change in inventory and overseas exports.

7. *Future course of coal production*

Prior to the interruption of oil imports in 1973, the Department of Interior projected a coal demand of 985 million tons by 1985; and the National Petroleum Council projected between 1 billion and 1.6 billion tons. In March 1973 the Department of Interior published a revised estimate of about 2 billion tons in 1985, or 3.3 times the 1972 production, and a doubling of coal production by 1980. A more detailed projection of coal demand will be set forth under Part V hereof.

8. *Types of freight rates on bituminous coal*

Bituminous coal is rated class 17-1/2 in the governing Uniform Freight Classification. However, extremely little, if any, coal moves at class rates, although at some shipping points class rates are the only rates available. For example, effective June 28, 1974, a unit-train rate applicable on bituminous coal over the lines of the Kansas City Southern Railway Company from Heavener, Okla., to Steeltown, Tex., was canceled. The cancellation notice provided that class rates would apply.

There are numerous types of commodity rates applying on bituminous coal. Those that are necessary for a clear understanding of the freight rate structure are discussed below.

Single-car rates, multiple-car rates, trainload rates, and unit-train rates are those based essentially on the number of cars used. In many instances the rates are not listed as single-car, multiple-car, trainload, or unit-train rates and the terminology is not always uniformly defined by carriers and shippers. As used in this report, a single-car rate is one that is published based on tonnage requiring the use of one car only. This tonnage is usually 100 tons or less, and is frequently based on the marked capacity of the car. Multiple-car rates are rates based on a sufficient tonnage to require the use of two or more cars, moving from one point of origin to one point of destination at one time. A multiple-car rate differs from a trainload rate in that the required tonnage is less than the amount necessary to make up an entire trainload as hereafter defined. A frequently maintained condition for multiple-car rates is 1,500 tons. A trainload rate is a rate that is published based on a sufficient tonnage to make up an entire train, usually 5,000 tons or more. The railroad equipment is usually furnished by the carrier and the movement does not have a predetermined continuously scheduled cycle. A unit-train rate is one that is published to apply on traffic moving in a sufficient set number of railroad cars and a given number of motive units dedicated to one unit between one point of loading and one point of unloading and moving in continously scheduled cycles. The cars may or may not be permanently coupled. The equipment and motive power are not taken out of the movement and in a number of instances the cars are shipper-owned.

Annual volume and conditional rates are those based primarily on the stipulation of the movement of a stated tonnage over a specific time period. A frequent annual-volume requirement is that 1 million tons of bituminous coal be tendered during one calendar year. There are single-car annual-volume rates, multiple-car annual-volume rates, trainload annual-volume rates, and unit-train annual-volume rates, depending upon the conditions of the published tariff.

There are certain types of rates based substantially on geographic considerations. The principal ones used in this report are concentration rates, gathering rates, tidewater rates, export rates, river rates, lake-cargo rates, and refund rates. Concentration rates are rates in connection with which it is provided that coal may originate at various separate mines, concentrated by the customer at one specific common point, thus permitting the movement of the cars beyond the concentration point in blocks so that from the place of concentration to the final destination the movement is multiple-car, trainload, or unit-train service. Gathering rates are rates from mines or stations to a concentration point such as Appalachia, Va., for rail movement beyond in multiple-car, trainload, or unit-train service. Tidewater rates normally refer to rates applying on coal moved by rail from the Appalachian fields to the ports of New York, Philadelphia, Baltimore, and Hampton Roads, for movement beyond by water to destinations in the United States. At times the coal movements destined to Baltimore and Hampton Roads for export are referred to as "tidewater coal" or "tidewater movements". This coal moves at export rates. An export rate is one specially established for application on export traffic. River rates are those that are published on traffic having a prior or subsequent movement via barge. Lake-cargo rates are those which are published on traffic having a prior or subsequent movement over one or more of the Great Lakes. Under certain conditions, a refund is provided in the tariffs after traffic has moved from the Lake Ports and the specified conditions are met. In some instances, rates applicable to a specific movement may consist of more than one of these types of rates.

We predict from the record as a whole that by 1980 more than 85 percent of the domestic coal traffic will move under annual-volume, concentration, trainload or unit-train concepts. Because of the importance of these rate concepts, they will be separately discussed in detail.

9. *The Annual-Volume And Concentration-Rate Concepts*

Annual volume rates have been used mainly as a competitive tool of the carriers in their efforts to thwart the use of alternative energy sources, such as natural gas, and the use of other forms of coal or energy transport, such as slurry pipelines or high-voltage wires. Also the annual-volume concept has sometimes been coupled with other transportation conditions designed to achieve economies in coal handling. In this way the carriers have attempted to offset, to the extent possible, the effect of revenue losses from downward adjustments necessitated by competition. A case which embodied these principles was *Bituminous Coal From Tenn., Ky., & Va. to N.C., Tenn., & Va.*, 325 I.C.C. 548 (1965). Because this case involved some of the ratemaking criteria used in establishing rates on coal it will be helpful to discuss the facts in more detail.

A large paper company near Asheville, N.C., was giving serious consideration to the construction of a natural gas pipeline to serve the area in which the paper company was located. Also, the particular pipeline involved had lost considerable gas sales which it had been making to the Atomic Energy Commission, and, therefore, it was searching for an outlet for its gas. In situations of this kind, the railroad seldom knows with specificity the actual gas prices being negotiated between the pipeline and the consumer. In this case, based on knowledge gained from competing with natural gas in other areas, the carrier concluded that the existing coal rates would have to be reduced by 38 cents per ton if the introduction of gas was to be forestalled. It often happens in cases of this kind that the carrier must make a judgment, or decision, based on past experience, for there is seldom sufficient time to make complicated cost studies if action is to be taken promptly. A decision was made to publish the reduced rate.

The proposed 38-cent reduction was permitted to become effective as published, subject to further investigation by the Commission. In order to show that the judgment of management was justified, the railroad presented independently prepared evidence showing the comparative costs of delivering coal and gas into the Asheville Area. The costs presented showed that the delivered cost of coal was $7.40 per ton, or 28.03 cents per million BTU. The cost of gas (which included the construction of the pipeline) would be $7.00 per ton, or 26.511 cents per million BTU. Thus, the 38-cent per ton reduction was found to be no greater than that necessary to meet the threatened competition.

The rail carrier was willing to make the 38-cent reduction if, at the same time, it could put into effect certain operational changes and restrictions which would result in a more economical handling of the coal. For example, the rates were subjected to an annual-volume minimum of 350,000 tons, and the lowest published rates applied in cars loaded to full visible capacity but not less than 100 tons per car. The rates were also made subject to a reduced free time period for loading and unloading. Under the old rates, the ordinary free time period for unloading coal cars was 48 hours. This time was reduced to 24 hours in order to insure a better turn-around time and maximize utilization of equipment. The Commission found that "the special conditions attached to the reduced rates increased transportation efficiency by producing heavier loads than are otherwise obtained in the same equipment and by encouraging the use of high-capacity efficient cars in high-volume, regular competitive movements."

Although the cost of large equipment exceeds that of smaller cars, there are savings in transportation effort flowing from the use of large cars. The principle involved is clear when assuming 100 tons of coal is being carried in one 100-ton car versus two 50-ton cars. The handling of one carload is saved and the car miles are cut in half. Because the tare weight of a 100-ton car is less than that of two 50-ton cars, the amount of dead weight per ton of coal carried is reduced. In the *Bituminous Coal* case an illustration was given of the savings in carloads, car-miles (loaded and empty) and tare-weight ton-miles derived from the use of 100-ton cars in lieu of a mixture of 50-ton, 55-ton, and 70-ton cars. This data is shown at page 560 of the report, and it is summarized as follows:

TABLE 12

Tons Of Coal	Savings In Carloads Handled	Savings In Loaded Car-Miles	Savings In Loaded And Empty Car-Miles	Savings In Tare-Weight Ton-Miles
51,355	214	46,015	85,589	867,894

In addition to annual-volume provisions, the railroads have established rates substantially lower than their single-car rates when the customer concentrates shipments at a common point. This permits the movement of the cars beyond the concentration point in blocks, so that from the place of concentration to the final destination the movement is multiple-car, trainload, or unit-train service. After setting forth the rates, the tariff will provide that they apply under conditions somewhat similar to the following:

> When in lots of 1,000 tons or more from origins in Groups 27, . . . 39 and 40 of this tariff, concentrated . . . at Knoxville, Tenn., and shipped from the concentration point in one day on one bill of lading from one shipper to one consignee at one destination for delivery at one location. This rate includes the assembling service from origin to Knoxville, Tenn.

The concentration principle was used by the rail carriers when they published gas-competitive rates to a new electric generating plant at Skyland, N.C. These rates were approved by the Commission in *Coal, Kentucky, Tennessee and Virginia to North Carolina,* 329 I.C.C. 572 (1967). Since this case involved several aspects of differential pricing, it will be worthwhile to discuss it from the beginning.

Carolina Power and Light Company decided that increased demand for electrical energy in western North Carolina was going to require the construction of a new plant at Skyland, N.C. The location was selected after weighing the cost of transporting fuel to the plant as against the cost of transmitting electricity to the load center. Similarly, after determining that a steam-electric plant would be constructed rather than a hydroelectric or nuclear power generating plant, the choice of whether to use coal or natural gas as the fuel depended upon a weighing of the delivered costs of each. At the time Carolina Power and Light entered into discussions with the railroads to find out whether the existing coal rates could be reduced, the estimated cost advantage in favor of natural gas was $294,000 per year. But, before any change could be made in the coal rates, a reduction in the gas rates increased the advantage to $467,000 per year.

To secure the use of coal at Skyland, the carriers agreed to reduce the existing rates by 45 cents per ton. It was anticipated that 500,000 tons of coal would be required each year. Thus, the annual reduction in the delivered price of coal as a fuel was $225,000. In order to realize savings in transportation costs to the fullest extent possible, concentration rates were made applicable only to movements of not less than 1,000 tons, concentrated at Asheville, N.C., or Knoxville, Tenn., and shipped in one day from one shipper to one consignee at one destination; the rate reduction was conditioned on prompt loading and unloading of cars; and finally, the reduced rates applied only when shipments were made in cars having a capacity of 70 tons or greater.

To illustrate the significance of cost-saving provisions, we need consider only the differences in costs of handling coal in loads of 55 tons as compared with moving the same amount of coal in 70-ton loads. Evidence was introduced showing the cost per ton in 55-ton loads as being 246.86 cents, and in 70-ton loads the per-ton cost of the carriers was 207.21 cents. This is a savings of 39.65 cents per ton, or on 500,000 tons the carriers would realize transportation cost savings of $198,250 by using larger cars. The Commission stated, at page 585:

> Reduced rates coupled with the use of high-capacity equipment made it possible for coal to compete with natural gas and obtained this coal traffic for the railroads at the new market at Skyland which had not existed heretofore. The evidence clearly and convincingly establishes that the use of high-capacity cars is more economical than less than 70-ton cars and all railroads participating in this traffic under the proposed reduced rates should realize a substantially higher return over out-of-pocket costs than would be realized if less than 70-ton cars were used in the service.

10. *The Unit-Train and Trainload Concept*

Before unit-train and trainload rates could be established there had to be a change in regulatory policy. Almost as soon as the Interstate Commerce Commission came into existence it decided that it could not condone a carrier giving some customers a ten-percent discount when they received in excess of 30,000 tons annually. See *Providence Coal Co.* v. *Providence & W. R. Co.*, 1 I.C.C. 107, decided in 1887. The Commission felt that this was at least potential discrimination against the small receivers unable to accept shipments in such quantities. The decision in the *Providence Coal Co.* case turned out to be a landmark ruling, for the principle established was followed for more than fifty years. In any number of cases, the Commission repeatedly held that movements of traffic in trainload, or in multiple-car lots, could not be afforded the benefit of rates lower than those charged by the railroads for transporting single carloads.

In the case of *Carstens Packing Co.* v. *Oregon Short Line R. Co.*, 17 I.C.C. 324, the Commission stated at page 328:

> . . . . . we desire it to be understood that nothing herein said shall be taken either as an approval of or acquiescence in a 10-carload rate, or to use a convenient phrase, in wholesale rates of any kind beyond the carload rates.

In *American Round Bale Press Co.* v. *A. T. & S. F. Ry. Co.*, 32 I.C.C. 458, the Commission said at page 463:

> The Commission has declined in notable instances to allow economies of carriage to control in the matter of setting preferential rates. For example, it has repeatedly and without exception refused not only to establish, but even to permit, the establishment of rates available only for the shipment of a trainload.

Thus, from the very beginning of regulation the carload was established as a basic unit for pricing. In order to place this early regulatory attitude in its proper perspective, it should be remembered that regulation of railroads came about during an era when these carriers were the dominant mode of transportation between inland points and, in some respects, perhaps, the monopoly transport mode. To those knowledgeable in today's methods of transportation pricing, the complete shift in regulatory thinking will be readily apparent. In fact, without it, the unit-train and trainload rates of today would not be possible.

It was not until 1939, however, that the Commission relaxed its previous rules and permitted competitive pricing for multiple-car shipments. The tariff publication involved represented an effort on the part of the railroads to compete with barge movements of blackstrap molasses. Rates were offered subject to a minimum weight of 1,800 tons, or the equivalent of thirty-eight tank cars. Although condemning the carrier-proposed rate of 14 cents per 100 pounds, the Commission approved the principle of multiple-car rates, or rates for shipments in excess of single carloads. *Molasses From New Orleans, La., to Peoria and Pekin, Ill.*, 235 I.C.C. 485.

About twenty years later a truly unitized train service came into being. The story of how this service was inaugurated is an interesting episode in the combined effort of the utility power plants and the railroads, working together, to provide a lower delivered price for coal. The Southern Electric Generating Company (SEGCO) had a plant site near Wilsonville, Ala., which was ideally suited for the production of electricity. The geographical location would afford economical power line transmission to load centers in Alabama and Georgia, which in the early 1960's amounted to approximately 1-1/2 million customers. Also, SEGCO operated coal mines not too far from the plant site. The Warrior coal field near Parrish, Ala., is 121 miles away. SEGCO operated a coal mine in this field, and also one in the Cahaba coal field near Maylene, Ala., 33 miles from the plant site.

In the late 1950's the power industry was enthusiastically discussing a relatively new concept in the transportation of coal, known as the "coal slurry pipeline". Also, the Maylene mine was close enough to make truck transportation a realistic possibility. At the same time the railroad (Southern) had an aluminum gondola car on its drawing board which could handle in excess of 100 tons of coal.

Because of their experience in working with aluminum, Lockheed Aircraft was given a contract to design an aluminum freight car capable of handling a nominal load of around 100 tons. The problem was not simple. For one thing, when coal becomes moist, it will leach sulphuric acid. This very readily ionizes and transmits electric current. Sometimes, when coal is stored for long periods of time, the drippings will cause considerable damage, even to the extent of eating through a steel rail. This problem of electrolysis had to be solved. Scientists, universities, and research groups were employed. These experts in the field of electrolysis found the answer and the aluminum coal car came into being. The result was a coal car which had a tare weight of approximately 10 to 13 tons less than a comparable size car in steel. The development of this car was later described as follows:

> There isn't any doubt but what it is a major breakthrough in the control of cost. It is the biggest effort that has been made in the railroad industry to keep the railroads competitive in the handling of materials such as coal, coke, grains, alumina and cement, items of the sort, with the various improvements that are being affected in other modes, such as pipelines that haul coal, such as the minemouth generation of electric power right at the mouth of the mine which avoids hauling coal altogether, changes the coal into electric energy which is as you might say piped over transmission lines at high voltages to the points of use.

Through the development of this car, and the cooperative effort between SEGCO and the railroad, the new transportation service that was later to become known as the "unit train" was developed. The service was inaugurated January 21, 1960.

The power plant that was built near Wilsonville, Ala., requires a minimum of 10,000 tons of coal per day for at least five days of every week. The electric energy output from the power plant can supply all of the electrical needs of over 2 million average homes per year. To handle this volume of coal, the train leaves Parrish, Ala., with 47 loaded cars of over 100 tons each. The train picks up 17 additional cars loaded at Boothton. When it arrives at the steam plant, the cars are unloaded with a rotary dumper. This dumper takes only 90 seconds to empty a car carrying 110 tons of coal. Since its inception in 1960, this unit train has carried over 35 million tons of coal to the generating plant.

This system is being further refined with the use of a "dumping bridge" and rapid discharge hopper cars. In this operation, as the train moves over a bridge, an electro-pneumatic system opens the car doors automatically, allowing the coal to dump from the cars onto a conveyor under the bridge, and then the system automatically closes the car doors after the car is empty. This system permits a train to be unloaded without the necessity for it to be stopped. A 10,000-ton train that would require 4 hours in a rotary dumper can be unloaded here in 20 minutes.

A new concept in the distribution of coal by railroad in unit trains was put into operation in September, 1966. One of the problems that develops in the inauguration of a unit train comes about by virtue of the fact that coal often originates at many small mines, no single one of which can produce and load out a trainload in one day. A past solution to this problem has been to store coal in large piles from which trainloads can be originated. But, coal does deteriorate to some extent when stored in the open. In fact, the loss of coal resulting from open-air storage has been found to make the construction of closed storage silos an economic feasibility. This is evidenced by General Coal Company's $3.2 million transloader at Appalachia, Va., from which it ships coal to two Duke Power Company plants in North Carolina.

In this operation coal from small-volume mines in southwestern Virginia is brought to the transloader in a gathering operation, making use of small hoppers and gondolas. The small equipment can be economically operated in a short-haul gathering function whereas they are largely obsolete for long-haul transportation of volume movements. The cars are emptied at the transloader by rotary dumper and conveyor belts carry the coal into the transloader silos. These silos are believed to be the largest coal storage silos in the world, each holding 14,000 tons of coal.

The loading of the coal directly from the silos into unit trains is accomplished at the rate of 10,000 tons in four hours. The unit trains involved in this operation travel 200,000 miles per year and deliver as much as 3-1/2 million tons of coal. The power plants at the destinations also have rotary dumpers. This makes it possible for each train to complete a round-trip cycle every 48 hours.

There is a definite difference between trainload and unit-train service. Although these terms are often loosely used to describe any trainload shipment of coal the services involved are completely different. Some railroads operate trainloads, using ordinary equipment in single moves at random times without reference to any scheduled operation. This type of service should be called trainload, and the applicable rates referred to as trainload rates.

On the other hand, unit trains involve a shuttle service concept with the train operating on a predetermined schedule and in assigned equipment. A representative of the Southern Railway System defined unit train as follows:

> My definition of a unit train – and I would like to add to the confusion by saying that I think the best nomenclature of all is a "cycle" train – one with a given set of railroad equipment, hopper cars or gondolas, and a given number of motive units, dedicated to one unit from one loading point to one unloading point. The equipment and the motive power are never taken out of this movement. The second point is that it is done on a regular clockwork schedule, 24 hours, 48 hours or whatever.

When Southern Railway unit-train tariffs are published, the service is normally defined in language similar to the following:

> A unit train shall consist of a sufficient number of automatic unloading open-top hopper cars having a capacity of 100 tons each and the motive power required to transport at least 1,150,000 tons of coal in unit train lots under the terms and conditions of Items 165-265, moving between__________ and__________, in continual cycles__________ during a period of 12 consecutive months.

Another railroad, the Union Pacific Railroad Company, in its Unit Train Coal Tariff No. 6023-A, ICC 5706, defines the term "unit train" as follows in item 110:

> UNIT TRAIN–a solid train of rail cars operated in shuttle service under load from origin and delivered intact to an industry at destination, returning empty intact for reloading at the same origin from which the original outbound shipment was made, or at another origin from which rates are authorized by this tariff.

The proceedings of the 66th annual convention of the American Railway Engineering Association contains the following excellent definition of unit-trains on page 566:

> The unit trains must be viewed as an element in a total system of distribution, embracing loading and unloading facilities and the intervening [line] haul. Ideally, the unit rain should be an integral train, that is, one with a fixed, coupled consist, including locomotives spaced throughout, and shuttling back and forth between one origin and one destination. Such a train would not be required to stop if loading and unloading facilities and fueling methods permitted continuous movement.

The definition goes on to set up certain criteria which should be met:

> a rigidly held timetable schedule, agreed to between shipper and carrier and subject to incentive rates carrying penalties for failing to perform as planned. Rapid turnaround cycles must be secured, implying quick loading and unloading. If the latter is to be dependably secured, there must be a program of weighing while coupled-in-motion or acceptance by the shipper of some form of average weight, alleviating the need for weighing the cars at all, except on a periodic sampling basis. * * * A unit train must be of sufficient size to enable a complete train to be moved intact from point of origin to point of destination without the need of being classified, thus eliminating attendant delays and costs, * * *.

Proceedings of the Sixty-Sixth Annual Convention of the American Railway Engineers Association, Volume 68, Chicago, Ill., 1967, p. 566.

Table 13 shows some of the basic elements involved in connection with six of Southern Railway's unit trains. These are the unit trains operating in interstate commerce to electric utilities in the southeast. In addition, Southern operates two unit trains in intrastate commerce, two more in interstate commerce, one to Official Territory, and one transporting metallurgical coal.

When competitive situations make it necessary for a carrier to contemplate the establishment of unit-train or trainload service, the following matters are commonly taken into account in determining the level of charges:

1. Origin Service Considerations
    a. Trackage necessary to reach mine
    b. Loading method
        (1) Flood loading with railroad performing pull-through service
        (2) Gravity-roll loading
        (3) Use of car puller or mine-operated switcher
    c. Loading time for each train
    d. Loading schedule of mine
2. Line Haul Service Considerations
    a. Train schedule
    b. Routing
    c. Train size (cars and power consist)
    d. Trackage upgrading
    e. Trackage grades

TABLE 13

Southern Railway's Unit Trains to Electric Utilities in the South - Interstate

	1.	2.	3.	4.	5.	6.
Origin	Appalachia, Va.	Appalachia, Va.	Arco, Tenn.	Appalachia, Va.	Oakman, Ala.	Enosville, Ind.
Destination	Belmont, N. C.	Catawba, N.C.	Harllee, Ga.	Catawba, N.C.	Yates, Ga.	Krannert, Ga.
Annual Tons	1,750,000	1,100,000	1,400,000	1,540,000	930,000	1,500,000
Date Initiated	Sept., 1966	Sept., 1966	Jan., 1968	June, 1969	Sept., 1971	Sept., 1973
Cars in Train	96	84	96	60	60	100
Car Type	GON-100T Aluminum	GON-100T Aluminum	GON-100T Steel	GON-100T Aluminum	GON-100T Aluminum	GON-100T Aluminum
Turnaround	48 hrs.	48 hrs.	58 hrs.	48 hrs.	36 hrs.	59 hrs.
Loading	6 hrs.	6 hrs.	4 hrs.	6 hrs	4 hrs.	4 hrs.
Unloading	4 hrs.	4 hrs.	4 hrs.	4 hrs.	6 hrs.	4 hrs.
Car Owner	SRS	SRS	Consolidation Coal Co.	SRS	SRS	SRS

- f. Annual tonnage to move
- g. Traffic density over routing
- h. Interchange facilities over joint routes
- i. Types of cars (carrier or shipper owned)
- j. Train labor characteristics

3. Destination Service Considerations
    - a. Trackage necessary to reach receiver
    - b. Unloading method
        - (1) Automatic unloading with railroad performing pull-through service
        - (2) Plant switcher or car puller positioning cars for rotary dumping
        - (3) Older, more conventional methods
    - c. Unload time for each train
    - d. Unload schedule of receiver

11. *Definitions of Service in Tariffs*

Definitions of service, particularly multiple-car, trainload, and unit train service, have been characterized by a morass of confusion and contradiction. These problems have occurred both in the various tariffs and in proceedings before this Commission. Two examples should suffice to demonstrate the confusion and controversy resulting from the lack of uniform definitions.

The Baltimore and Ohio Railroad Company's Freight Tariff C-199-A, ICC 3363, is designated "Eastbound *Trainload* Bituminous Metallurgical or Coking Coal Rate Tariff" (emphasis supplied). Item 200 of the tariff provides per-shipment minimum weight of, *inter alia*, 1,500 net tons. If that amount were shipped in cars of 100-ton capacity each, a "trainload" shipment would be only 15 cars. However, in *Illinois Intrastate Coal Rates to East St. Louis, Ill.*, 304 I.C.C. 769, 771 rates on coal subject to a minimum of 30 cars per shipment were denoted "multiple-car rates." Clearly the understandability and feasibility of application of the coal tariff provisions is impaired if a shipper cannot ascertain what the terms "trainload" and "multiple-car" used in a tariff mean.

In Investigation and Suspension Docket No. 8860, *Bituminous Coal within Eastern District*, 346 I.C.C. 590 (1974), the controversy centered about the application of increases authorized by the Commission in Ex Parte No. 281. In the latter case, the Commission had authorized a 4 percent, maximum 20 cents per ton, increase on multiple-car and trainload coal movements. However, a lower maximum of 15 cents per ton was approved on unit-train rates. Several shippers contended that the coal movements to their facilities were unit-train movements entitled to the 15 cents per ton maximum; alternatively, the carriers argued that the movements in question were trainload movements entitled to the larger 20 cents per ton maximum. Obviously if uniform definitions of "trainload" and "unit-train" movements had been established, the controversy would have been quickly settled and the regulatory process dramatically foreshortened.

Therefore, in order to improve the understandability, feasibility of application, freedom from controversy, and facilitation of the regulatory process with regard to the tariff schedules on bituminous coal, the Coordinator recommends that the Commission institute a proceeding for the purpose of defining the terms unit-train, trainload, multiple-car, annual-volume and other conditional services so that these terms may be used uniformly in carrier tariff publications thereafter.

12. *Differential System and Grouping*

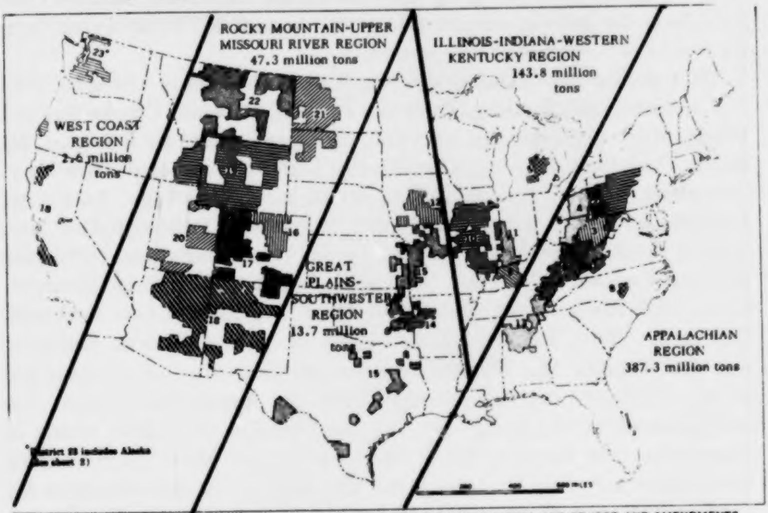
Single-car rates have traditionally been structured according to the principle of grouping mines within a given coal field for ratemaking purposes. Coal from all mines within the boundaries of a given group are charged the same rate per ton to a specific market, with the closer group generally assigned lower rates and hence forming the "base group" for a regional adjustment. The difference between the rate from the base group and that from a more distant group is called a "differential". Additionally, in some cases destinations are grouped; each destination within a particular group takes the same rate per ton from a given origin or origin group.

13. *Origin Ratemaking Regions and Groups*

For convenience of discussion, the coal producing areas are divided into the following origin ratemaking regions: Appalachian Region, north and south; the Illinois-Indiana-Western Kentucky Region; and the regions West of the Mississippi River, i.e., Great Plains-Southwestern Region, Rocky Mountain-Upper Missouri River Region, and the West Coast Region. Map Number III shows these regions and the total 1972 production for each region. From the standpoint of coal production, the Appalachian and Illinois-Indiana-Western Kentucky regions are the most important These two regions produced more than 500 millions tons of coal in 1973, compared with less than 70 million for mines west of the Mississippi River. However, because of the large low-sulfur deposits in the Rocky Mountain-Upper Missouri River area, this region has become increasingly important.

MAP NUMBER III

Map showing ratemaking regions, coal producing districts and 1972 production


ROCKY MOUNTAIN-UPPER MISSOURI RIVER REGION
47.3 million tons
ILLINOIS-INDIANA-WESTERN KENTUCKY REGION
143.8 million tons
WEST COAST REGION
2.6 million tons
GREAT PLAINS-SOUTHWESTERN REGION
13.7 million tons
APPALACHIAN REGION
387.3 million tons
23*
22
21
19
20
16
17
18
12
10
11
15
14
13
4
*District 23 includes Alaska (See sheet 21)
200
400
600 MILES

BITUMINOUS COAL PRODUCING DISTRICTS AS DEFINED IN THE BITUMINOUS COAL ACT OF 1937 AND AMENDMENTS
The districts were originally established to aid in formulating minimum prices of bituminous coal and lignite. Because much statistical information was compiled in terms of these districts, their use for statistical purposes has continued since the abandonment of that legislation in 1943.

14. *Appalachian Region*

The Appalachian region includes those fields located in Pennsylvania, Ohio, Maryland, West Virginia, Virginia, Tennessee, Alabama, and eastern Kentucky. The coal fields of eastern Kentucky have different quality characteristics than the fields of western Kentucky. The latter fields are related to, and have historically been included in, the Illinois-Indiana group. The coal deposits of northern West Virginia, western Pennsylvania, and eastern Ohio, are related geographically to major consuming markets in the East and in some respects have similar quality characteristics.

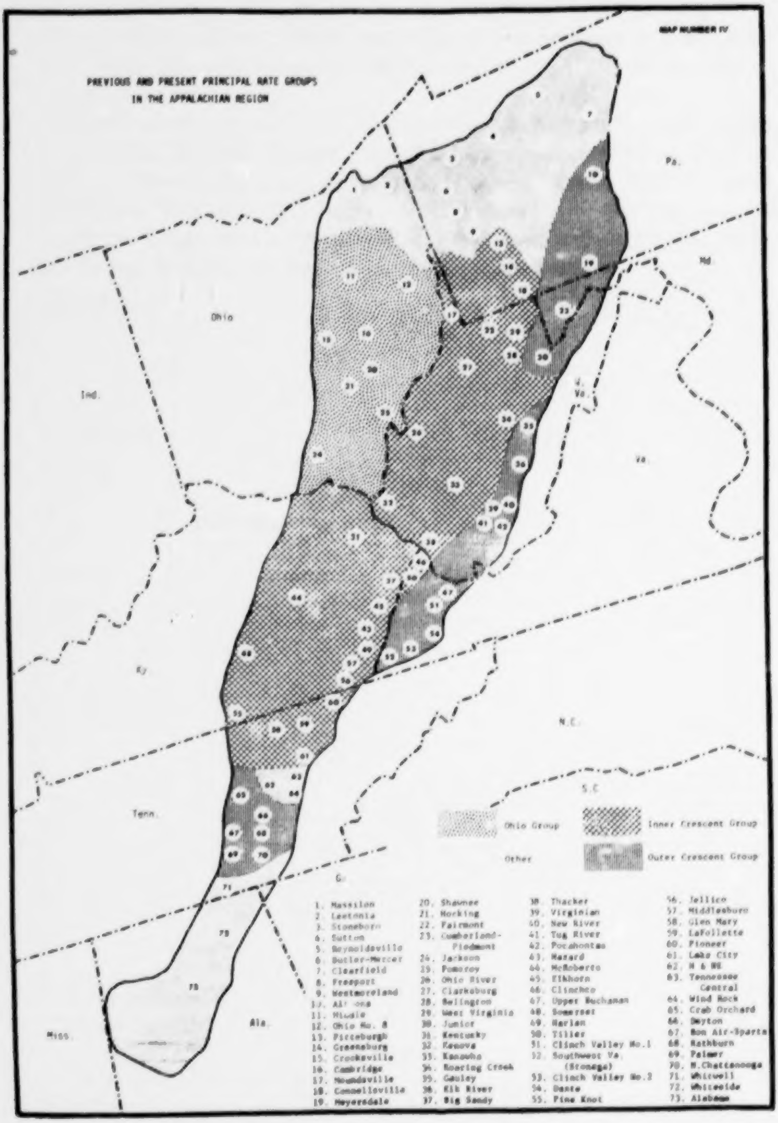
For many years, the terms "Ohio Group", the "Inner Crescent", and the "Outer Crescent" have been used in ratemaking parlance to refer to coal moving from the Appalachian Region to Central Freight Association Territory and Lake Ports. The coal fields in the Ohio Group (coal producing district No. 4) are in the eastern part of Ohio and extend to, or nearly to, the Ohio River. After crossing the Ohio River into Pennsylvania and West Virginia, the next fields are known as the Inner Crescent. The coal producing districts east of the Inner Crescent are the Outer Crescent. Historically, these districts were called the crescent groups because they comprise a geographic configuration much like a crescent moon, with the concave side toward the Ohio Group and the cities along the Great Lakes. The fields nearest the Ohio River form the inner or concave side of the crescent and those beyond form the convex or outer side of the crescent.

The principal ratemaking groups which are in the Ohio grouping are Ohio No. 8, Cambridge, Hocking, Pomeroy, Jackson, Shawnee, Crooksville, and Middle. Major ratemaking groups within the Inner Crescent are Belington, Big Sandy, Clarksburg, Clinchco, Connellsville, Elkhorn, Fairmount, Glen Mary, Greensburg, Harlan, Hazard, Jellico, Middlesboro, LaFollette, Lake City, Kanawha, Kenova, Kentucky, McRoberts, Moundsville, Pittsburgh, Pine Tree, Roaring Creek, Thacker, and Virginia. Typical ratemaking groups comprising the Outer Crescent are Altoona, Meyersdale, Cumberland-Piedmont-Somerset, Gauley, Elk River, Junior, New River, Tiller, Tug River, Upper Buchanan, Pocahontas, Clinch Valley # 1, Clinch Valley # 2, Dante, Stonega, Rathburn, and West Virginia. Map Number IV shows the location of the previous and present principal ratemaking groups within the Appalachian Region. The configurations of the groups are very irregular and they differ widely in comparative area. Some of the groups measure more than 150 miles along their longest axis. Map Numbers V through XXVI in the appendix show the configurations and different sizes of rate groups in the Appalachian Region.

When considering the rate group maps, it should be understood that they are not intended to fix the precise extent or configuration of those groups. Recognized rate groups may include more or fewer stations depending upon the destination, the identity of the carrier, or simply the convenience of publication. The rate group maps in this report are designed to identify the principal rate groups, their general location, their size, and their general configuration. These rate groups change for many reasons, including among others the opening and closing of mines. Should knowledge of the rate for any specific movement be desired, it is necessary that resort be made to the appropriate tariff on file with the Commission.

15. *Illinois, Indiana, and Western Kentucky Region*
(Eastern Interior Region)

This region consists of the coal fields in Illinois, Indiana, and Western Kentucky. Illinois has coal fields distributed throughout the State, but most of its coal is produced in the southern part of the State. The coal mines of Indiana are located in the southwestern part of the State. In Kentucky, there are two distinct areas of coal production; one group of mines lying in the eastern part of the State which, as previously noted, is included as part of the Appalachian region. The western Kentucky mines, which from the standpoint of production are the lesser of the two areas, are included as part of the same


MAP NUMBER IV
PREVIOUS AND PRESENT PRINCIPAL RATE GROUPS
IN THE APPALACHIAN REGION
Pa.
Md.
Ohio
Ind.
W. Va.
Va.
Ky.
N.C.
S.C.
Tenn.
Ga.
Ala.
Miss.
Ohio Group
Other
Inner Crescent Group
Outer Crescent Group
1. Massilon
2. Leetonia
3. Stoneboro
4. Sutton
5. Reynoldsville
6. Butler-Mercer
7. Clearfield
8. Freeport
9. Westmoreland
10. Altoona
11. Midvale
12. Ohio No. 8
13. Pittsburgh
14. Greensburg
15. Crooksville
16. Cambridge
17. Moundsville
18. Connellsville
19. Meyersdale
20. Shawnee
21. Hocking
22. Fairmont
23. Cumberland-Piedmont
24. Jackson
25. Pomeroy
26. Ohio River
27. Clarksburg
28. Belington
29. West Virginia
30. Junior
31. Kentucky
32. Kenova
33. Kanawha
34. Roaring Creek
35. Gauley
36. Elk River
37. Big Sandy
38. Thacker
39. Virginian
40. New River
41. Tug River
42. Pocahontas
43. Hazard
44. McRoberts
45. Elkhorn
46. Clinchco
47. Upper Buchanan
48. Somerset
49. Harlan
50. Tiller
51. Clinch Valley No.1
52. Southwest Va. (Stonega)
53. Clinch Valley No.2
54. Dante
55. Pine Knot
56. Jellico
57. Middlesboro
58. Glen Mary
59. LaFollette
60. Pioneer
61. Lake City
62. N & WE
63. Tennessee Central
64. Wind Rock
65. Crab Orchard
66. Dayton
67. Bon Air-Sparta
68. Rathburn
69. Palmer
70. N.Chattanooga
71. Whitwell
72. Whiteside
73. Alabama

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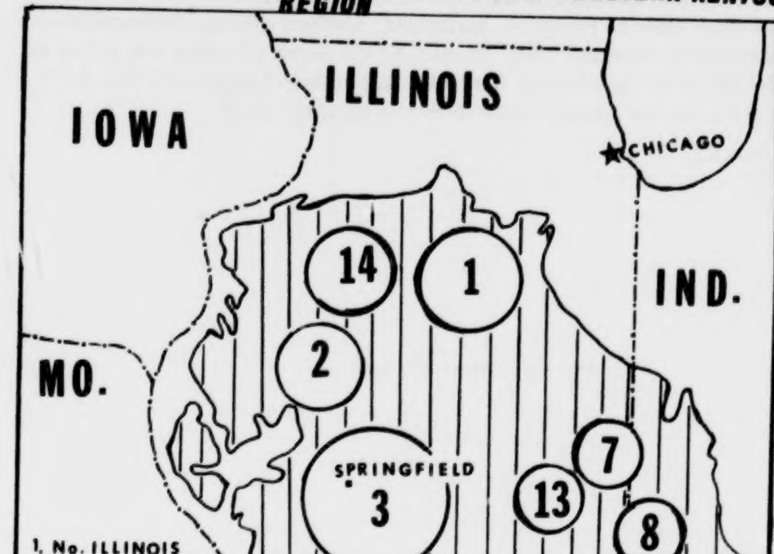
region with the mines of Illinois and Indiana. Coal produced in this region is used mostly for steam purposes and for the most part is not suitable for commercial coke.

The principal rate groups in the Illinois-Indiana-Western Kentucky Region are Belleville, Boonville, Brazil-Clinton, Danville, DuQuoin, Fulton, Murdock, Northern Illinois, Princeton, Springfield, Southern Illinois, Sullivan-Linton, and Western Kentucky. Map Number XXVII shows the major rate groups in the Illinois-Indiana-Western Kentucky Region. Map Numbers XXVIII, XXIX, and XXX in the appendix show those rate groups in detail.

MAP NUMBER XXVII

ORIGIN RATE GROUPS--ILLINOIS--INDIANA--WESTERN KENTUCKY REGION


ILLINOIS
IOWA
CHICAGO
IND.
MO.
SPRINGFIELD
EAST ST. LOUIS
KENTUCKY
1
2
3
4
5
6
7
8
9
10
11
12
13
14
1. No. ILLINOIS
2. FULTON COUNTY
3. SPRINGFIELD
4. BELLEVILLE
5. DU QUOIN
6. SO. ILLINOIS
7. DANVILLE
8. BRAZIL-CLINTON
9. LINTON-SULLIVAN
10. PRINCETON
11. BOONVILLE
12. WESTERN KENTUCKY
13. MURDOCK
14. LAFAYETTE

16. *Regions West of the Mississippi River*

Bituminous coal is mined in 14 states west of the Mississippi River. Production in 1972 ranged from 428,000 tons in Arkansas to 10.9 million tons in Wyoming. Map Number XXXI, *infra*, shows the rate origin groups in the Rocky Mountain-Upper Missouri River Region. This area includes 7 States each of which produced in 1972 in excess of 4.8 million tons of coal: Wyoming (10.9 million); Montana (8.2 million); New Mexico (8.2 million); North Dakota (6.2 million); Colorado (5.5 million); Utah (4.8 million). Map Numbers XXXII, XXXIII, and XXXIV, in the appendix, show rate groups in Arkansas, Missouri-Kansas, and Oklahoma. Of these States, only Missouri produced in 1972 as much as 4.5 million tons of coal.

The socio-economic indicators of the Upper Missouri River region west of the Mississippi River (Montana, North Dakota, South Dakota, Wyoming, and Nebraska), particularly as they relate to the coal producing States of Montana, North Dakota, and Wyoming, are matters pertinent to this investigation. The following is excerpted from "Upper Missouri River Region, A Socio-Economic Profile, February, 1972" issued by the Department of Commerce:

> The study area has been described in terms of such basic socio-economic indicators as population, living levels, income, employment and industrial structure. In the present chapter, these indicators will be summarized, and their implications for the study area's overall level of development will be pointed out.
>
> Taken together, these indicators paint a fairly clear picture of slow economic growth – a condition rooted in the ending of agriculture's hey-day as an engine of growth in the study area and the lack of a viable non-farm sector to take its place. As technological changes in agriculture reduced job opportunities both on the farm and in service activities related to farming, substantial numbers of residents were left with the choice either of leaving the area or of finding work in the non-farm sector.
>
> Many did, in fact, leave the area. Even in a period as recent as 1962-67, the area had a net loss of 61,000 workers. This out-migration was a principal contributor to rates of population growth slower in every study area State than in the Nation. Moreover, it helped result in the concentration in "dependent" age groups of above-average portions of the population remaining in the area.
>
> For those who, rather than migrate, looked toward the non-farm sector for job opportunities, the situation was not promising. In recent years each study area State grew more slowly than did the Nation both in non-farm earnings and in non-agricultural employment. This condition was all the more significant because in recent years non-farm earnings and employment have come to account for increasingly larger segments of the study area's total earnings and employment. Slow rates of growth in total activity, in turn, reflected industrial structures in each of the study area's 16 economic areas that were dominated by slow-growth industries. Moreover, there do not appear to be any fast-growth industries on the horizon that might accelerate the area's future growth.

Despite the area's poor growth performance, its living levels have tended to compare favorably with those of the Nation as a whole. This judgment is based upon the examination of data on median age, mortality rates, housing conditions, educational levels and, except for Indians and the elderly, the relative absence of low-income families.

To say that slow growth together with favorable levels of living has characterized the study area in general is not to deny the existence of significant differences in economic performance among the five component States.

Of the five States, the situation in Nebraska least resembled a development problem. In 1970, Nebraska was far more densely populated, more urbanized and more metropolitanized than any of the other five States. As the first of the States to be fully settled, Nebraska was the first to adjust to agricultural change. A noteworthy aspect of this adjustment was Nebraska's leadership among the five States in recent years in the rate of growth of both non-farm earnings and non-agricultural employment. This performance represented impressive gains in industrialization, which were reflected in the relatively diversified industrial structures of Nebraska's economic areas. By 1980, all five of these economic areas are expected to have per capita income levels of at least 86 percent of the national average. The levels for two of these areas – Omaha and Scottsbluff – are expected to reach 98 percent of the national average.

The situation in Montana and Wyoming is less encouraging. In 1970, these two States were less urbanized than Nebraska but more urbanized than the Dakotas. In recent years their growth rates in both non-farm earnings and non-agricultural employment were the lowest in the study area. This circumstance suggests that despite the similarity of Montana's and Wyoming's economic areas to Nebraska's in terms of diversification of industrial structure, these States' component industries have been significantly less viable than Nebraska's. By 1980, the four economic areas comprising Montana and Wyoming are expected to have per capita income levels between 83 and 92 percent of the national average – levels generally lower than those of Nebraska's areas.

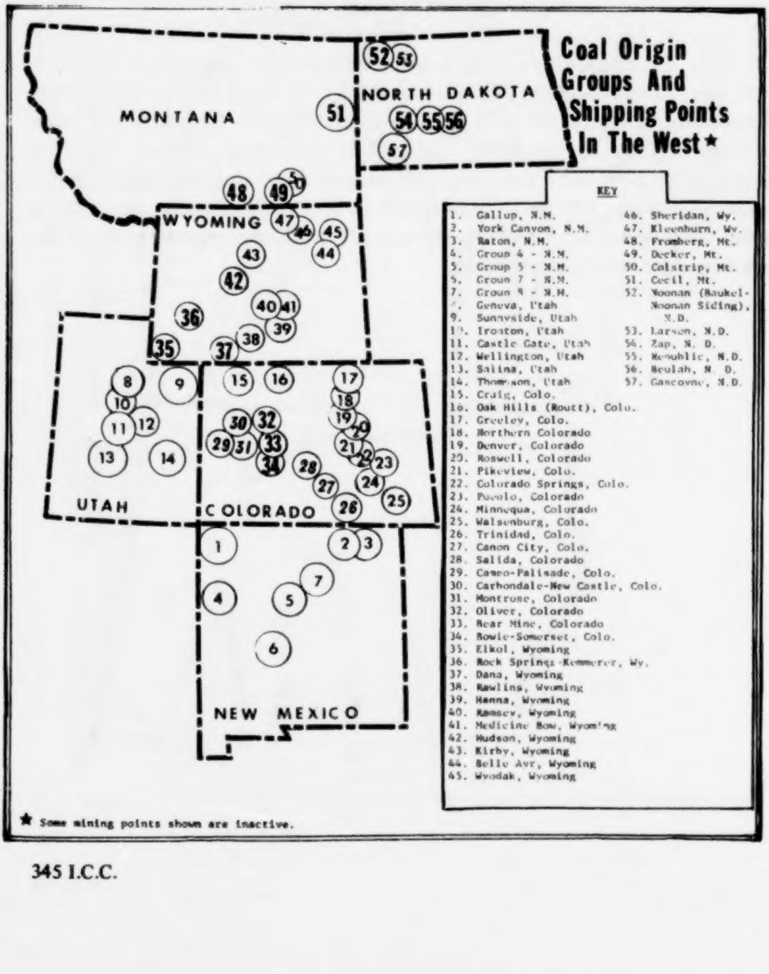
The situation in the Dakotas clearly suggests a problem area. As the most rural of the five States, the Dakotas in recent years have had the slowest rates of population growth. Moreover, the fact that they have consistently led the study area in the portion of earnings attributable to the slow-growth farm sector helps to explain their slow overall growth rates. Agriculture's domination of these States' overall economic activity is likewise seen in the industrial structures of the seven economic areas comprising the Dakotas. In 1980, the level of per capita income in every one of these economic areas is expected to be less than 80 percent of the national average.

On the basis of this analysis, it seems clear that North Dakota and South Dakota meet the criterion of lagging behind the Nation in economic development. The case for Montana and Wyoming rests largely on the poor economic performance in these States during the most recent decade and on the fact that a number of their counties, including Indian reservations, have chronically and substantially lagged behind the national average in their level of per capita income. As for Nebraska, although the State as a whole cannot be characterized as an area lagging in economic development, the income data for specific counties and specific socio-economic groups, such as the rural non-farm population, indicate pockets of substantial poverty and slow growth. On the basis of these less-developed sub-segments of its population, Nebraska meets the lagging criterion.

Efforts are being made to increase sharply the production of coal in the Upper Missouri River area. This in turn has generated substantial concern in both Congress and on the part of state governors, legislators, and numerous interests, both public and private. A number of major unit trains on coal are now newly in existence and major projects in addition to line extensions are being planned.

While certain unit-train rates exist, there is not any formal rate structure in the traditional sense in the Rocky Mountain-Upper Missouri River region. Numerous major repetitive markets have not yet been fully developed.

MAP NUMBER XXXI


Coal Origin Groups And Shipping Points In The West*
MONTANA
NORTH DAKOTA
WYOMING
UTAH
COLORADO
NEW MEXICO
KEY
1. Gallup, N.M.
2. York Canyon, N.M.
3. Raton, N.M.
4. Group 4 - N.M.
5. Group 5 - N.M.
6. Group 7 - N.M.
7. Group 8 - N.M.
8. Geneva, Utah
9. Sunnyside, Utah
10. Ironton, Utah
11. Castle Gate, Utah
12. Wellington, Utah
13. Salina, Utah
14. Thompson, Utah
15. Craig, Colo.
16. Oak Hills (Routt), Colo.
17. Greeley, Colo.
18. Northern Colorado
19. Denver, Colorado
20. Roswell, Colorado
21. Pikeview, Colo.
22. Colorado Springs, Colo.
23. Pueblo, Colorado
24. Minnequa, Colorado
25. Walsenburg, Colo.
26. Trinidad, Colo.
27. Canon City, Colo.
28. Salida, Colorado
29. Cameo-Palisade, Colo.
30. Carbondale-New Castle, Colo.
31. Montrose, Colorado
32. Oliver, Colorado
33. Bear Mine, Colorado
34. Bowie-Somerset, Colo.
35. Elkol, Wyoming
36. Rock Springs-Kemmerer, Wy.
37. Dana, Wyoming
38. Rawlins, Wyoming
39. Hanna, Wyoming
40. Ramsey, Wyoming
41. Medicine Bow, Wyoming
42. Hudson, Wyoming
43. Kirby, Wyoming
44. Belle Ayr, Wyoming
45. Wyodak, Wyoming
46. Sheridan, Wy.
47. Kleenburn, Wy.
48. Fromberg, Mt.
49. Decker, Mt.
50. Colstrip, Mt.
51. Cecil, Mt.
52. Noonan (Baukol-Noonan Siding), N.D.
53. Larson, N.D.
54. Zap, N. D.
55. Republic, N.D.
56. Beulah, N. D.
57. Gascoyne, N.D.

★ Some mining points shown are inactive.

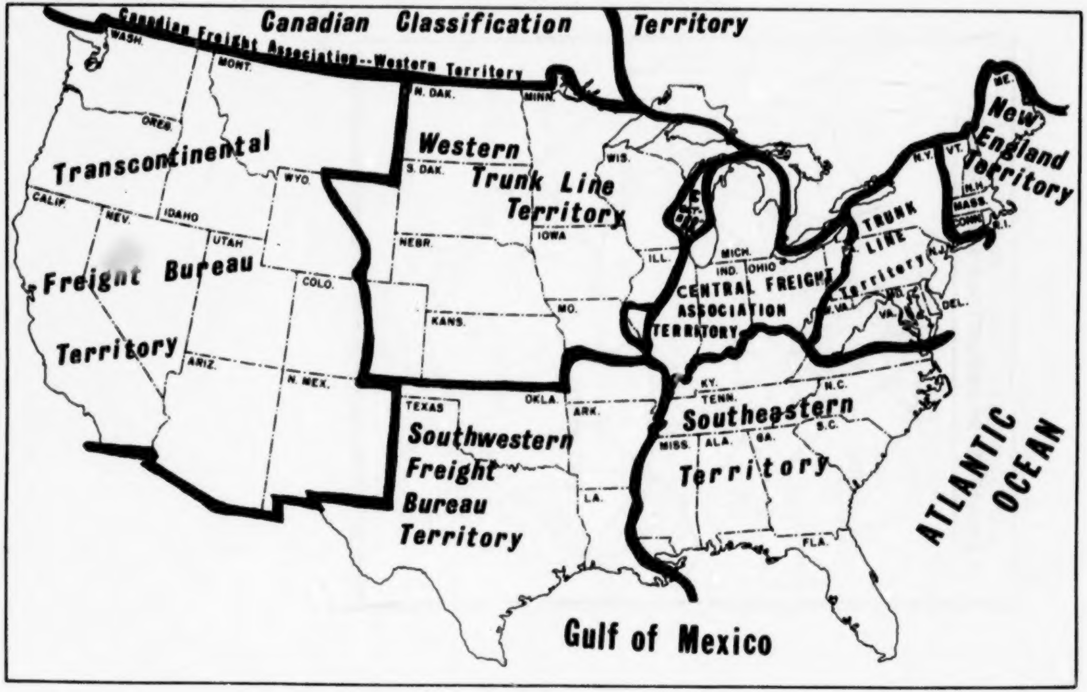
17. *Destination Rate Groups*

Bituminous coal shipped from origin rate groups normally moves to defined areas. For example, movements of coal to the Southeastern states comes mainly from the Appalachian Region (except Ohio and Pennsylvania) and from Indiana and Western Kentucky in the Illinois-Indiana-Western Kentucky Region. It is expected that in the near future southern Illinois will be another important source of coal for electric utilities in the Southeast. Map Number XXXV shows the freight rate territories established by the railroads which will be referred to in this report.

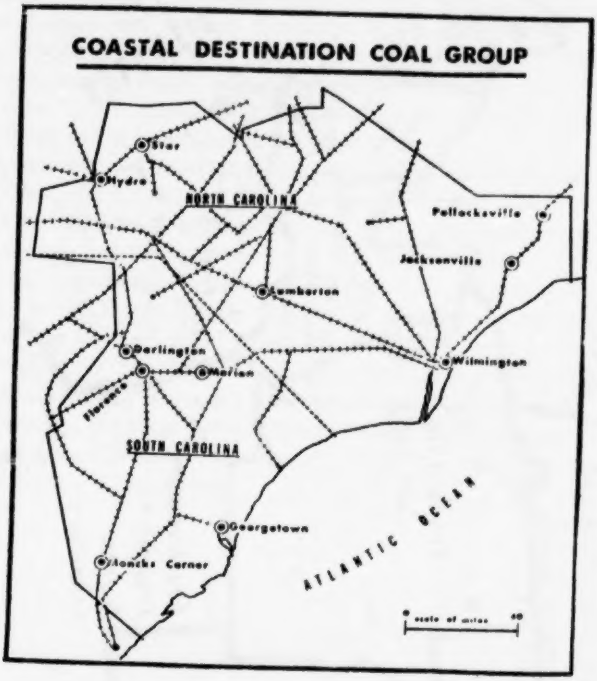
The destination area to which a rate applies sometimes comprises a large area. Map Numbers XXXVI and XXXVII show destination groups measuring from 100 to 150 miles in length. The main freight rate structures are those (1) from the Appalachian Region to Trunk Line and New England Territories; (2) from the Appalachian Region to Central Freight Association Territory; (3) from Indiana-Illinois-Western Kentucky Region to Central Freight Association Territory; (4) from Indiana-Illinois-Western Kentucky and Appalachian Regions to the Great Lake Ports (lake-cargo traffic); (5) from Indiana-Illinois-Western Kentucky and Appalachian Regions to the Southeastern territory; (6) from Indiana-Illinois-Western Kentucky and Appalachian Region to Tidewater Ports, and (7) from the regions west of the Mississippi River to all territories.

MAP NUMBER XXXV

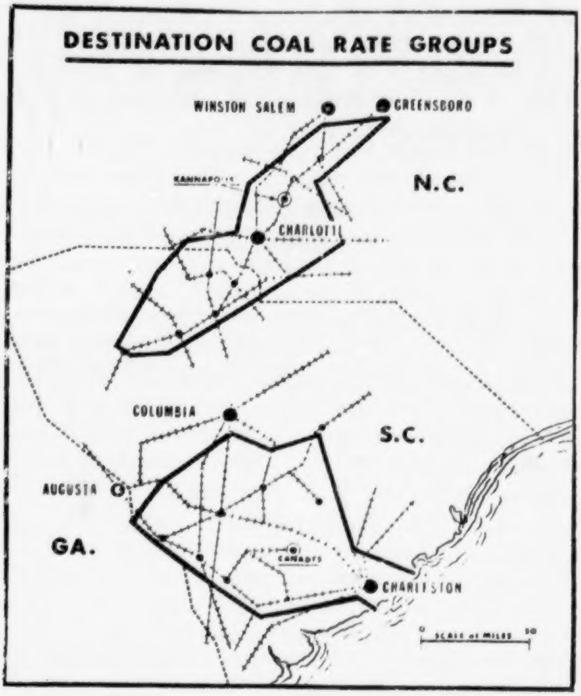
Map of Rail Freight Rate Territories


Canadian Classification Territory
Canadian Freight Association--Western Territory
Transcontinental Freight Bureau Territory
Western Trunk Line Territory
Central Freight Association Territory
Trunk Line Territory
New England Territory
Southwestern Freight Bureau Territory
Southeastern Territory
Atlantic Ocean
Gulf of Mexico
WASH.
MONT.
OREG.
WYO.
CALIF.
NEV.
IDAHO
UTAH
COLO.
ARIZ.
N. MEX.
N. DAK.
S. DAK.
NEBR.
KANS.
MINN.
WIS.
IOWA
ILL.
MO.
MICH.
IND.
OHIO
OKLA.
TEXAS
ARK.
LA.
KY.
TENN.
MISS.
ALA.
GA.
FLA.
N.C.
S.C.
VA.
W.VA.
MD.
DEL.
N.J.
N.Y.
VT.
ME.
N.H.
MASS.
CONN.
R.I.

MAP NUMBER XXXVI


COASTAL DESTINATION COAL GROUP
Star
Hydro
NORTH CAROLINA
Pollocksville
Jacksonville
Lumberton
Darlington
Florence
Marion
Wilmington
SOUTH CAROLINA
Georgetown
Moncks Corner
ATLANTIC OCEAN
scale of miles

MAP NUMBER XXXVII


DESTINATION COAL RATE GROUPS
WINSTON SALEM
GREENSBORO
KANNAPOLIS
N.C.
CHARLOTTE
COLUMBIA
S.C.
AUGUSTA
GA.
CANADYS
CHARLESTON
0 SCALE OF MILES 50

18. *Rate Structure on Coal from the Appalachian Region to Trunk Line, New England, and Buffalo-Rochester Territories*

The transport of coal from the Appalachian Region to Trunk Line and New England Territories is a major source of rail freight tonnage. By far, the largest coal consumers in the East are electric utilities. In 1971, of the total of 128,058 tons terminated in the East, 57 percent was consumed at electric utilities. Table 14 shows the distribution of bituminous coal in the East by destination and consumer use for 1971.

TABLE 14*

(Thousand tons)

Destination	Total	Electric Utilities	Coke and Gas Plants	Retail Dealers	All Others
Massachusetts	227	122	---	14	91
Connecticut	1,271	1,185	---	---	86
Me., N.H., Vt., & R.I.	947	877	---	7	63
New York	15,596	7,373	4,188	54	3,981
New Jersey	2,974	2,862	---	2	110
Pennsylvania	58,982	30,273	21,760	640	6,309
Delaware & Maryland	11,599	6,408	4,369	41	781
District of Columbia	598	283	---	29	286
Virginia	9,258	5,821	27	407	3,003
West Virginia	26,606	17,458	4,323	239	4,586
Grand Total	128,058	72,662	34,667	1,433	19,296

*Statistics for all of Virginia and West Virginia are included here although a portion of each State is not in Official Territory.

The northern Appalachian bituminous coal fields embrace a wide area extending through central and western Pennsylvania, northern West Virginia and the western part of Maryland. It is from these coal producing areas that the eastern markets of the United States traditionally have drawn the major share of their bituminous coal requirements. However, coal from the southern Appalachian coal fields, particularly metallurgical coal, also finds its way into the eastern market.

The traditional eastbound rate adjustment, like most important coal rate structures in the United States is made on an origin and destination group basis. Each of the origin and destination groups usually extends over a broad geographic area. From northern Appalachian fields to Trunk Line and New

England Territories, the Clearfield, Cumberland-Piedmont-Somerset, and Reynoldsville Districts are the base districts. There are, however, exceptions, for example: (1) from the Cumberland-Piedmont-Somerset District to numerous points in New York and New England the rates are the same as applicable from the differentially higher Westmoreland and West Virginia Districts, and (2) from the Reynoldsville District to various destinations in Delaware, Maryland and Pennsylvania the rates are at the same level as apply from the differential districts, either Greensburg or Westmoreland Districts depending upon origin.

The higher differential rate districts located west of the base districts are Greensburg, Westmoreland, West Virginia and Gauley Districts. At the inception the single-car rates from the Greensburg District were 10 cents gross ton over the Clearfield District but currently range generally from 10 cents to 14 cents net ton over the base district. From the Westmoreland and West Virginia Districts the basic differential was 25 cents gross ton over the base districts and now is approximately 28 cents to 33 cents per net ton. Since 1919 the rates from the Gauley District have been 15 cents gross ton higher than those from the West Virginia District or 40 cents gross ton over the base districts. The basic 40-cent gross ton differential from the Gauley District presently runs about 45 cents to 51 cents net ton over the base district rates.

The destination territory involved in the eastbound bituminous coal rate adjustment lies east of the line drawn along the Genessee and Susquehanna Rivers from Lake Ontario to Harrisburg, Pa., and on and east of the Cumberland Valley from Harrisburg, Pa., to Winchester, Va. The eastern boundary extends along the Atlantic coast from Maine to eastern Virginia. It includes the transshipment piers operated by the Baltimore and Ohio Railroad (B&O), the Penn Central Transportation Company (PC), and the Western Maryland Railway (WM) at Baltimore, Md.; the Penn Central Transportation Company and Reading Company at Philadelphia, Pa.; and the Reading Company in New York Harbor.

This destination area is blanketed with approximately thirty single-car destination rate groups. The groupings tended to develop around important coal receiving destinations. Historically, the single-car destination groups have been sensitive to various competitive forces, which influenced the rate relationships between destinations. The competition takes various forms such as: (a) between railroads, at common points and to attract new industrial plants, (b) between railroads and trucks, (c) between bituminous coal producing districts, and (d) between bituminous coal and other forms of fuel. In an earlier era there was serious competition between the railroads and canals and between bituminous coal and anthracite.

The close destination relationship of the bituminous coal rates to eastern territory had made it a fact of life that any significant rate change to large volume coal receiving points would affect the rates to related destinations. Today, the impact of a change in single-car rates to an important coal consuming point or related destinations has diminished somewhat because of the reduced tonnage moving on single-car rates. The coal is now largely moving on trainload, annual volume, or multiple-car rates which did not exist earlier. The present trainload, multiple-car, and annual volume rates are not published to every station as are the single-car rates, but only apply to destinations with consignees capable of receiving such shipments. The trainload, multiple-car and annual volume rates do observe the same origin and destination relationships as the single-car rates, and consequently they are sensitive to the various competitive factors.

The two principal northbound coal rate groups are Buffalo, N.Y., and points taking the same rates, and Rochester, N.Y. , and destinations accorded the same rates. To the so-called Buffalo-Rochester territory, the rates from the northern fields apply from mines in northern Appalachian and Ohio origins in the Ohio No. 8, Middle and Cambridge rate districts and constitute a separate rate adjustment from the adjustment to Trunk Line and New England territories. Like the eastbound adjustment, the northbound rates are made on an origin and destination group basis. Insofar as rates to the Buffalo-Rochester territory are concerned, the Reynoldsville District is the base rate district with origins in other districts taking higher rates.

From the nearby origin groups which furnish the larger share of coal destined to the Buffalo-Rochester territory, the origin rate differentials to Rochester, N.Y., are the same as applied to Buffalo, N.Y. From the more distant mines, the rates to Rochester, N.Y., carry origin differentials in greater amounts than the origin differential relationship from the same origin groups to Buffalo, N.Y.

The destination area of the northbound coal rate adjustment includes all points in an area in New York State west of a line drawn from Rochester, N.Y., through Wellsville, N.Y. to the Pennsylvania State line. On the western end the adjustment includes a relatively small area in Pennsylvania just south and west of the New York-Pennsylvania line.

West of the Buffalo rate group is what used to be called the Warren group, but there is now an assortment of rates to points such as Dunkirk, N.Y., Harbor Creek, N.Y., Union City, Pa., and Bradford, Pa. Dunkirk, N.Y., is the largest coal receiving point of those cited.

The present single-car rates to the Buffalo-Rochester Territory reflect adjustments in the steam coal rates to meet motor competition. Reduced rates conditioned on the shipment of a minimum annual volume were first published in 1959 in response to competition from residual oil. Further competitive pressures forced a major reconsideration of the methods of establishing rates, resulting in publication of trainload rates. The publication of trainload rates on bituminous steam coal to Trunk Line, New England, and Buffalo-Rochester territories now takes the form of specific trainload rates applicable only to destinations where there are trainload coal receivers.

The foregoing has described the straight single-car rates on bituminous coal which apply on bituminous coal used for both steam purposes and metallurgical or coking purposes, and on trainload and other conditional rates which apply only on bituminous steam coal. As a matter of fact, until 1963 there had been few, if any, rates applicable solely on metallurgical or coking coal to points in Trunk Line, New England, or Buffalo-Rochester Territories.

The rates on bituminous coal to steel mills where the coal would be used for metallurgical purposes have been sensitive to change because of the severe competition between the steel plants. Competitive pressures on metallurgical coal also have come from coal producers in other mining districts. For example, if rates on coal from southern Appalachian fields to plants in Pennsylvania are reduced, as happened early in 1963, rates from northern Appalachian origins must be similarly reduced if the tonnage is not to be lost entirely. In response to these pressures, price reductions in conjunction with annual-volume or trainload requirements have been published to apply specifically on metallurgical coal.

Since mid-1964, the unit-train concept has made considerable strides toward establishing itself as a major market pricing factor. A number of unit-train rates have since been published in Eastern Territory. The level of each rate has been tailormade on the basis of factors pertaining to the individual movement, and usually has applied from one origin to one destination without observing the usual origin and destination relationships.

Unit-train rates in the East have generally taken the full increases in nearly all of the general rate increases authorized by the Commission. However, there have been a few exceptions. In the initial negotiations prior to the establishment of several of the unit-train rates, agreement was reached to escalate the rates without regard to general rate increases authorized by the Commission. It has only been under Ex Parte No. 256 and/or Ex Parte No. 259 that the above-mentioned unit-train rates were not increased the same as the increases granted by the Commission. In subsequent general rate increases, including Ex Parte No. 259 in some instances, all unit-train rates have been subject to the full increases authorized by the Commission.

Tables 15, 16, 17, and 18 show examples of rates for single-car, annual-volume, trainload or multiple-car, and unit-train movements, respectively, on coal from the northern Appalachian fields to Trunk Line, New England, and Buffalo-Rochester Territories.

The movement of coal from the southern Appalachian fields to the northeast tends to be limited to specialized metallurgical and low sulfur coals because of the longer distances they must be transported. In 1972 the N&W

originated about 3.1 million tons of coal that moved off line to Eastern Territory destinations. Primarily, this involved metallurgical coal for eastern steel mills. Steel mills are located at Bethlehem, Pa., Fairless, Pa., Swedeland, Pa., and Sparrows Point, Md. With the exception of Sparrows Point, Md., coal is received in all-rail movement. The Sparrows Point plant receives coal by water, some through the Baltimore piers of the B&O, PC or WM, and some by boat from the Hampton Roads, Va., piers of the Norfolk and Western Railway (N&W), and C&O. The tariffs governing these movements stipulate a minimum movement of 1,500 tons per day from one origin, or 5,000 tons per day concentrated from more than one origin. The rates in these tariffs stem back to an adjustment which became effective June 8, 1964, at which time the single-car rates were reduced 30 cents per net ton to the majority of destinations at which steel plants are located, and the resulting rates made applicable to daily multiple-car movements of 1,500-5,000 tons.

TABLE 15

Single-Car Rates

Origin District	Destination	Miles	Rate (cents)
Reynoldsville	Bristol, Pa.	317	642
Gauley	Brentwood, N.Y.	614	824
Gauley	Amherst, Mass.	849	864
Junior	Lincoln, N.H.	931.9	903
Clearfield	Worcester, Mass.	640	804
Reynoldsville	Echota, N.Y.	200	513
Reynoldsville	Lockport, N.Y.	239	513
Leetonia	Jamestown, N.Y.	165	477

TABLE 16

Annual-Volume Rates

Origin District	Destination	Rate (cents)	Distance (miles)	Annual-Volume Requirement (tons)	Amount Below Normal Rate
Junior	Howes Cave, N.Y.	685	614.9	50,000	50
Elk River	Atlantic City, N.J.	655	524.5	100,000	50
Butler-Mercer	Nazareth, Pa.	607	519.5	50,000	50
Clearfield	Carthage, N.Y.	677	414	50,000	30

TABLE 17

Trainload and Multiple Carload Rates

Origin District	Destination	Rate (cents)	Distance (miles)	Minimum Consignment (tons)	Amount under Normal Rate	Loading Free Time (hours)	Unloading Free Time (hours)
Elk River	Herbert, Md.	515	412	7,000	242	48	24
Clearfield	Bethlehem, Pa.	589	269	1,500	40 and 72	48	24
Elk River	Bethlehem, Pa.	619	443.9	1,500	40 and 73	48	24
Roaring Creek	Martins Creek, Pa.	520	482	7,000	172	48	24
Gauley	Ludlowville, N.Y.	520	608	7,000	172	48	24
Westmoreland	Eddystone, Pa.	503	451	7,000	173	24	24
Westmoreland	Indian River, Del.	525	450	7,000	173	24	24
Clearfield	Dresden, N.Y.	471	255	7,000	172	24	24
Clearfield	Dunkirk, N.Y.	439	215	7,000	209	24	24
Butler-Mercer	Rochester, N.Y.	439	256.2	7,000*	177	48	24
Fairmont	Rochester, N.Y.	481	449	7,000	175	48	24
Pittsburgh	Rochester, N.Y.	460	316	7,000	176	24	24
Fairmont	Rochester, N.Y.	481	443.2	7,000	175	24	24

*From one or two origins

TABLE 18

Unit-Train Rates

Origin District	Destination	Rate (cents)	Distance (miles)	Minimum weight per car (tons)	Annual-Volume Requirement	Loading Free Time	Unloading Free Time
Westmoreland	Martin's Creek, Pa.	433	528	100, except when loaded to full visible or cubical capacity	None	6 hours	No limit–Private Trucks
Westmoreland	Concord, N.H.	502	869	100, except when loaded to full visible or cubical capacity	900,000 tons	4 hours	12 hours

While the predominant markets for N&W and C&O coal moving off-line to eastern territory are the steel plants mentioned, steam coal is received by electric utilities in northern Virginia, eastern Pennsylvania, New Jersey, and New York. A utility located at Alexandria, Va., receives steam coal from N&W and C&O origins under the terms of Agent Baughan's Freight Tariff 27-C, I.C.C. 309. This tariff contains varying rates depending on the annual volume of tonnage received during a 12-month period–the annual tonnage requirement ranging from 500,000 to 900,000 tons per year.

The normal source of steam coal for utilities located in eastern Pennsylvania, New Jersey, and New York is from the northern coal fields of Pennsylvania and northern West Virginia. These fields are located more closely to the utilities and the transportation costs are accordingly less than from the southern fields served by the N&W and C&O. However, strict air pollution legislation imposed by Federal and State Governments in the past few years has brought on a demand for the lower sulfur coals found in the southern fields. Tariffs of carriers from southern origins currently publish all-rail rates to Reading, Pa., and rates to Philadelphia, Pa., and New Jersey piers for transshipment to destinations in New York and New Jersey. The tariffs contain two lines of rates–one applying on 7,000-ton trains from one or two origins, and the other applying on 7,000-ton trains from three, but not more than five origins.

Traffic-wise there has been little or no movement of coal in recent years from the southern fields into the New England states and the movement into Maryland, Pennsylvania, New York and New Jersey is confined primarily to the few destinations just discussed at which electric utilities or steel mills are located.

Table 19 gives rates for movements from the southern Appalachian fields to destinations in Trunk Line Territory.

19. *Rate Structure on Coal from the Appalachian Region to Central Freight Association (CFA) Territory*

Rates from the Appalachian Region to CFA Territory have traditionally been constructed on a differential basis. The three general origin rate groups have been the Ohio group designated as the base group, the Inner Crescent group, and the Outer Crescent group. Table 20 shows the major interstate coal movements from various Appalachian producing districts to CFA Territory for track delivery, grouped according to their differential rate groups. The tonnages shown were derived from the one-percent waybill sample and are likely understated.

TABLE 19

Origin District	Destination	Rate (cents)	Distance (miles)	Minimum Consignment (tons)	Annual-Volume Requirement	Loading Free Time	Unloading Free Time (hours)
Big Sandy	Bethlehem, Pa.	759	894	1,500 & 5,000	None	Normal	24
Big Sandy	Fairless, Pa.	758	748	1,500 & 5,000	None	Normal	24
Pocahontas	Fairless, Pa.	723	585	1,500 or 5,000 –2 or more origins	None	Normal	24
Thacker	Swedeland, Pa.	758	601	1,500 or 5,000	None	Normal	24
Virginian	Swedeland, Pa.	723	576	1,500 or 5,000	None	Normal	24
Clinch Valley No. 2	Alexandria, Va.	574	415	Single Car	900,000 tons	Normal	Normal
Thacker	Alexandria, Va.	606	411	Single Car	900,000 tons	Normal	Normal

TABLE 20

Major Interstate Movements of Bituminous Coal – 1972
Track Delivery Coal From Appalachia to CFA Territory
(Rate Groups to State Destinations – One Percent Waybill Tonnage)

	MICHIGAN	OHIO	INDIANA	ILLINOIS	TOTALS
Alabama					
Alabama 1			413	1,446	1,859
Ohio Groups					
Crooksville	10,743	403			11,146
Middle	370	277			647
Ohio # 8	35,875	1,345			37,220
Pittsburgh # 8	18,826	585			19,411
Wheeling Creek # 8		287			287
Inner Crescent					
Belington		644			644
Big Sandy	2,825	10,618		7,948	21,391
Clarksburg		1,569			1,569
Clinchco		4,584		3,054	7,638
Elkhorn	407	1,105		548	2,060
Harlan		5,701		1,564	7,265
Hazard	3,689	7,537		393	11,619
Jellico	2,047	355			2,402
Jellico-Middlesboro		3,123			3,123
Kanawha	1,373	39,484		7,987	48,844
Kenova	263	6,248			6,511
Moundsville	1,039	593			1,632
Pittsburgh		4,897			4,897
Reynoldsville B	467	11,710			12,177
Stoneboro	467	6,394			6,861
Sutton	467	6,856			7,323
Thacker	299	6,312	410	14,490	21,511
Virginian		5,144	1,556		6,700
Outer Crescent					
New River	306	3,276	1,184	611	5,377
Pocahontas		12,806	16,616	12,394	41,816
S. W. Va. (Stonega)		786	591		1,377
Tiller		1,517			1,517
Tug River		6,559		5,619	12,178
Upper Buchanan		3,106	1,168		4,274
Other					
Reynoldsville		4,762			4,762
Westmoreland		4,834			4,834
Non-Specified		309			309
Totals	79,463	163,726	21,938	56,054	321,181

Table 21 sets forth examples of single-car rates. Since the establishment of the differential rate structure, all readjustments have been made in response to competitive pressures. Moreover, unit-train, trainload, multiple-car, and annual-volume rates have developed in response to competition. These latter types of rates have come to play an increasingly important role in the freight rate structure and are likely to do so in the future. Table 22 gives examples of unit-train, trainload, multiple-car, and annual-volume rates from the Appalachian origin districts to CFA Territory.

TABLE 21

Single-Car Rates

Origin District	Destination	Distance (miles)	Rate (cents)
Big Sandy	Saginaw, Mich.	477	753
Ohio No. 8	Saginaw, Mich.	361	689
Ohio No. 8	Otsego, Mich.	398	650

TABLE 22

Unit-Train, Trainload, Multiple-Carload, and Annual-Volume Rates

Origin	Destination	Distance (miles)	Rate (cents)	Minimum Car Weight	Minimum Consignment	Annual Volume	Free Time (hours)
Ohio No. 8	Midland, Mich.	450	373	100 tons	10,000 tons	None	Loading - 4 Unloading - None
Crooksville	Essexville, Mich.	352	311	100	9,750	None	Loading - 6 Unloading-7 & 12
Fairmont	Monroe, Mich.	379.9	190	124	17,000	None	Loading - 4 Unloading - 10
Ohio No. 8	West Olive, Mich.	429.7	373	Capacity	9,750	None	Loading - 10 Unloading - 10
Middle	Essexville, Mich.	357	311	Capacity	98 cars	None	Loading - 6 Unloading - 6
Butler-Mercer	Cleveland, Ohio	122.5	370	90% MC	350 tons	None	--------
Freeport	Youngstown, Ohio	137.1	385	90% MC	1500	None	Loading - 48 Unloading - 48
Big Sandy	Cleveland, Ohio	439	590	Capacity	1500 & 5000	None	Loading - Normal Unloading - 24
Ohio No. 8	Lansing, Mich.	362	441	Capacity	4,500	1,000,000	Loading - 12 Unloading - 12
Kenora	Toledo, Ohio	361	447	Capacity	9,500	480,000	Loading - 6 Unloading - 10
Pittsburgh	Cleveland, Ohio	163	503	Capacity	1,500	-----	Loading - 48 Unloading - 24

TABLE 22 (cont.)

Unit-Train, Trainload, Multiple-Carload, and Annual-Volume Rates

Origin	Destination	Distance (miles)	Rate (cents)	Minimum Car Weight	Minimum Consignment	Annual Volume	Free Time (hours)
Pittsburgh	Burns Harbor, Ind.	492	621	Capacity	7,200	-----	Loading - 48 Unloading - 24
Clearfield	Youngstown, Ohio	184	477	Capacity	1,500	-----	Loading - 48 Unloading - 24
Leetonia	Orrico, Ohio	103	294	Capacity	----	4,300,000	--------
Leetonia	Willoughby, Ohio	107	253	Capacity	----	4,300,000	--------

A significant tonnage of coal proceeding from the Appalachian fields to CFA Territory is shipped a part of the distance by river. The majority of that traffic flowed within and between the northern Appalachian fields and CFA Territory. All river and ex-river coal moved at single-car rates. Table 23 shows examples of river and ex-river rates.

TABLE 23

River & Ex-River Rates

Origin District	Destination	Rail Origin	Rail Distance	Rate
River Big Sandy	Huntington, W. Va., for transshipment via river to Clairton, Pa.	----	151	204
New River	Ceredo, W. Va., for transshipment via river to Lone Star, Tex.	----	171	246
Big Sandy	Huntington, W. Va. for transshipment via river to St. Louis, Mo.	----	156	211
Ex-River Pittsburgh	Youngstown, Ohio	Colona, Pa. Ex-River	41.5	180

20. *Rate Structure on Coal from Indiana, Illinois, and Western Kentucky to CFA and Western-Trunkline Territories (WTL)*

Production of bituminous coal in Indiana, Illinois, and Western Kentucky totaled 127,617,000 tons in 1971. The vast majority of the coal was consumed within CFA Territory. The mines located in the midwestern fields of Illinois, Indiana and Western Kentucky have historically been competitive with each other to the Illinois, Indiana, Iowa, Minnesota, Missouri, and Wisconsin coal receiving markets. However, under today's market conditions, historical shipping patterns and relationships are practically nonexistent. Some of these mines ship coal to the destination area involved via all-rail routes only, while some are located so as to enable them to ship either all-rail or rail-barge, and some because of their geographic location either on the Ohio or Green Rivers are in a position to ship their coal to this area either via all-rail or all-barge routes.

Table 24 shows the rates to selected destinations from illustrative origins. The coal rates shown are those generally applicable on bituminous fine coal under which the predominant tonnages move. This table shows rates in effect as of September 1, 1973, to East St. Louis, Ill., Crandic, Iowa, Waterloo, Iowa, Dubuque, Iowa, Albert Lea, Minn., Eau Claire, Wisc., and Chicago, Ill.

TABLE 24

Single-Car Rates

From Origin Group	Representative Origin	Destination	Rate	Distance (miles) Actual
Belleville, Illinois	Lenzburg, Illinois	East St. Louis, Illinois	(d)295	33
			(a)211	33
			(b)153	33
			(c)198	33
Southern Illinois	West Frankfurt, Illinois		(d)332	99
			(a)230	99
			(b)199	99
Western Kentucky	Madisonville, Kentucky		(d)403	246
			(a)290	246
			(b)264	246
Southern Illinois	West Frankfurt, Illinois		666	624

TABLE 24 (cont.)

Single-Car Rates

From Origin Group	Representative Origin	Destination	Rate	Distance (miles) Actual
Western Kentucky	Madisonville, Kentucky	Crandic, Iowa	717	643
Princeton, Indiana	Oakland City, Indiana		706	571
Southern Illinois	West Frankfurt, Illinois	Waterloo, Iowa	618	501
Western Kentucky	Madisonville, Kentucky		668	644
Princeton, Indiana	Oakland City, Indiana		598	511
Southern Illinois	Stonefort, Illinois	Eau Claire, Wisconsin	726 726	644 735
Western Kentucky	Vogue, Kentucky		775	800
Princeton, Indiana	Oakland City, Indiana		756 711	723 682
Southern Illinois	Stonefort, Illinois	Dubuque, Iowa	567 567	488 533
Belleville, Illinois	Pyatts, Illinois		544	391
Western Kentucky	Madisonville, Kentucky		738	569
Southern Illinois	Orient Mine No. 3, Illinois	Alberta Lea, Minnesota	725	554
Western Kentucky	Madisonville, Kentucky		826	759
Princeton, Indiana	Oakland City, Indiana		706 706	669 669
Southern Illinois	West Frankfort, Illinois	Chicago, Ill. District	(l)546 (m)562	422 422

TABLE 24 (cont.)

Single-Car Rates

From Origin Group	Representative Origin	Destination	Rate	Distance (miles) Actual
Princeton, Indiana	Oakland City, Indiana -And- King, Indiana	Chicago, Ill. District	(l)531 (m)511	287 287
Western Kentucky	Madisonville, Kentucky	Chicago, Ill. District	608	421
Western Kentucky	Madisonville, Kentucky	Marshfield, Wisconsin	687	817
Southern Illinois	West Frankfort, Illinois		643	697
Princeton, Indiana	Oakland City, Indiana		625	567
Western Kentucky	Madisonville, Kentucky	Wisconsin Rapids, Wisconsin	687	791
Southern Illinois	West Frankfort, Illinois		643	723
Princeton, Indiana	Oakland City, Indiana		625	732
Western Kentucky	Madisonville, Kentucky	Oak Creek Power Plant, Wisconsin	633	602
Southern Illinois	West Frankfort, Illinois		586	487
Princeton, Indiana	Oakland City, Indiana		560	356
Western Kentucky	Madisonville, Kentucky	Mason City, Iowa	734	736
Southern Illinois	West Frankfort, Illinois		687	699
Princeton, Indiana	Oakland City, Indiana		669	681
Southern Illinois	West Frankfort, Illinois	Hannibal, Missouri	512	239

Explanation of Reference Marks

(a) Applicable only on interstate traffic when reshipped beyond via river, except as provided under reference mark (b).
(b) Applicable only on interstate traffic when for reshipment beyond via barge to destinations on the Minnesota, Mississippi or St. Croix Rivers.
(c) Not applicable from River King Mine, Illinois. Will apply only when destined to deliveries in the Chicago, Illinois area on the Chicago River, Sanitary and Ship Canal, Calumet Sag Channel, Calumet River and Little Calumet River.
(d) Not applicable on shipments consigned to East St. Louis, Ill., when reshipped beyond via River.
(l) Applies to points in Illinois within the Chicago Switching District.
(m) Applies to points in Indiana within the Chicago Switching District.

Not all of these destinations receive substantial tonnages of coal; some receive only nominal amounts. Southern Illinois, Western Kentucky, Belleville, Ill., and Princeton, Ind. are the major producing points from which coal originates. Included among the rates shown in Table 23, and appropriately designated, are rates applicable on traffic when for reshipment beyond the rail destination by barge.

Tonnages to East St. Louis, Ill., for transshipment beyond via barge have steadily increased since 1960. For example, during 1961, 1,716,122 tons were handled over the dock compared to 3,193,516 tons in 1971. Coal moving to Hennepin County (the greater Minneapolis market) normally moves via rail and then by barge to destination.

Competition throughout the Midwest is intense both from other fuels, from other modes of transportation, and from other mine origin localities. Therefore, rate adjustments in the form of annual-volume, multiple-car, trainload, and unit-train rates have become widespread. For example, annual-volume rates were established to Iowa City, Iowa, subject to a minimum of 50,000 tons, in order to meet the threat of natural gas competition in the early 1960's. In 1958, a multiple-car rate for shipments of not less than 1,000 tons were established from origins in the Western Kentucky group to all points in the Chicago Switching District to meet barge competion from Illinois and Kentucky origins.

Table 25 shows annual-volume and multiple-car rates from Illinois, Indiana, and Western Kentucky origins to destinations in Illinois, Iowa, Missouri, and Wisconsin.

Table 26 is a statement of unit-train or trainload rates from Illinois, Indiana, and Western Kentucky origins to points in Illinois, Indiana, and Wisconsin. These unit-train rates do not reflect any known scale, formula or prescribed basis or relationship, but are tailored to the individual shipper, receiver and carrier requirements, as detailed herein under the heading, "The Unit-Train and Trainload Concept," *supra*.

TABLE 25

Multiple-Car and Annual-Volume Movements

From Origin Group	Representative Origin	Destination	Rate	Minimum Weight or Required Min. Weight (Tons)	Distance (Miles) Actual	Reduct. Below Single Carload Rates
Belleville, Illinois	Lenzburg, Illinois	East St. Louis, Illinois	(d)(e)233 (d)(f)163	1,250 1,500	33 33	62¢ 132¢
Southern Illinois	West Frankfort, Illinois		(d)(e)275 (d)(f)200	1,250 1,500	99 99	57¢ 132¢
Western Kentucky	Madisonville, Kentucky		(d)344	1,250	246	59¢
Southern Illinois	West Frankfort, Illinois	Crandic, Iowa	585	(i)50,000 per year	624	81¢
Western Kentucky	Madisonville, Kentucky		637	(i)50,000 per year	643	80¢
Princeton, Indiana	Oakland City, Indiana		565	(i)50,000 per year	523	141¢
Southern Illinois	West Frankfort, Illinois		539	(i)100,000 per year	501	79¢

TABLE 25 (cont.)

Multiple-Car and Annual-Volume Movements

From Origin Group	Representative Origin	Destination	Rate	Minimum Weight or Required Min. Weight (Tons)	Distance (miles) Actual	Reduct. Below Single Carload Rates
Western Kentucky	Madisonville, Kentucky	Waterloo, Iowa	591	(i)100,000 per year	644	77¢
Princeton, Indiana	Oakland City, Indiana		519	(i)100,000 per year	567	79¢
Southern Illinois	Stonefort, Illinois		644	(i)30,000 per year	644	82¢
			644	(i)30,000 per year	735	82¢
Western Kentucky	Vogue, Kentucky	Eau Claire, Wisconsin	688	(i)30,000 per year	800	82¢
Princeton, Indiana	Oakland City, Indiana		626	(i)30,000 per year	682	85¢

Southern Illinois	West Frankfort, Illinois	Chicago Ill. District	(l)480	(n)1,000	422	66¢
			(m)494	(n)1,000	422	68¢
			(l)410	(n)2,500	422	136¢
			(m)422	(n)2,500	422	140¢
			(l)(o)378	(n)5.000	422	161¢
			(m)(o)389	(n)5,000	422	166¢
Princeton, Indiana	Oakland City, Indiana -And- King, Ind.	Chicago Ill. District	(1)462	(n)1,000	287	69¢
			(m)462	(n)1,000	287	49¢
			(1)390	(n)2,500	287	141¢
			(m)390	(n)2,500	287	121¢
Western Kentucky	Madisonville, Kentucky	Chicago, Ill. District	541	(n)1,000	421	67¢
			471	(n)2,500	421	137¢
Western Kentucky	Madisonville, Kentucky	Marshfield, Wisconsin	649	(i)40,000 per year	817	38¢
Southern Illinois	West Frankfort, Illinois		603	(i)40,000 per year	697	40¢
Princeton, Indiana	Oakland City, Indiana		584	(i)40,000 per year	567	41¢

TABLE 25 (cont.)

Multiple-Car and Annual-Volume Movements

From Origin Group	Representative Origin	Destination	Rate	Minimum Weight or Required Min. Weight (Tons)	Distance (miles) Actual	Reduct. Below Single Carload Rates
Western Kentucky	Madisonville, Kentucky	Wisconsin Rapids, Wisconsin	649	(i)100,000 per year	791	38¢
Southern Illinois	West Frankfort, Illinois		603	(i)100,000 per year	723	40¢
Princeton, Indiana	Oakland City, Indiana		584	(i)100,000 per year	732	41¢
Western Kentucky	Madisonville, Kentucky	Oak Creek Power Plant, Wisconsin	542 542	(n)1,000 (n)1,000	602	91¢
Southern Illinois	West Frankfort, Illinois		508	(n)1,000	487	78¢
Princeton, Indiana	Oakland City, Indiana		486	(n)1,000	356	74¢

Southern Illinois	West Frankfort, Illinois	Hannibal, Missouri	231	(n)1,250	239	281¢

Explanation of Reference Marks

(d) Not applicable on shipments consigned to East St. Louis, Ill., when reshipped beyond via river.

(e) Applicable only when shipped on one bill of lading, on one day, at one time, from one origin, from one consignor to one consignee, to one delivery, at one destination. Each car subject to minimum weight of marked capacity of car, except when loaded to full visible capacity actual weight will be the minimum weight.

(f) Applicable only when shipped on one bill of lading, on one day, at one time, from one origin, from one consignor, to one consignee, to one or more deliveries in the same plant, at one destination. Each car subject to minimum weight of marked capacity of car, except when loaded to full visible capacity actual weight will be the minimum weight.

(i) Multiple-car tonnage requirement applies on shipments to this destination from all origin groups (also including groups not shown in this statement).

(l) Applies to points in Illinois within the Chicago Switching District.

(m) Applies to points in Indiana within the Chicago Switching District.

(n) Required minimum weight per shipment.

(o) Applies on bituminous coal for metallurgical or coking purposes only.

TABLE 26

Bituminous Coal

Unit-Train or Trainload Movements

(Rates in cents per ton of 2,000 lbs. – Rates include X-295-A)

			Shipment Weights (Tons)		
Origin	Destination	Rate	Minimum	Maximum	Car Ownership
(Sullivan-Linton Group) Latta, Ind.	Fayette, Ind.	73	3,600	----	RR
		77	3,500	----	RR
		82	3,400	----	RR
		84	2,950	----	RR
(Sullivan-Linton Group) Latta, Ind.	Indianapolis, Ind.	202	2,400	6,400	S
		243	2,400	6,400	RR
(Southern Illinois Group) W. Frankfort, Ill.	Oak Creek Power Plant, Wisconsin	435	10,000	----	RR
(Western Kentucky Group) (Madisonville)		471	10,000	----	RR
(Princeton Group) Princeton, Ind.		410	10,000	----	RR
(Southern Illinois Group) Orient Mine 5, Ill.	Oak Creek Power Plant, Wisconsin	300	11,500	----	S
(Southern Illinois Group) Orient Mine 6, Ill.		300	11,500	----	S
(Western Kentucky Group) River Queen, Ky.		340	11,500	----	S
(Southern Illinois Group) Sesser, Ill.	Oak Creek Power Plant, Wisconsin	300	9,500	12,500	S

TABLE 26 (cont.)

Bituminous Coal

Unit-Train or Trainload Movements

(Rates in cents per ton of 2,000 lbs. – Rates include X-295-A)

Average Tons Per Car or Tariff Minimum	Distance (miles) Actual	Rate Reduction under Single-Car Rate	Annual Tonnage (Aggregate) Tariff Requirement	Annual Tonnage (Aggregate) Estimated 1972 Tonnage
76 or MC	34	207	2,250,000	2,250,000
76 or MC	34	203	2,000,000	- - - -
76 or MC	34	198	1,500,000	- - - -
76 or MC	34	196	1,300,000	- - - -
100	103	63	900,000	- - - -
100	103	22		
85 or MC	468	151	- - - -	100,000
85 or MC	619	162	- - - -	- - - -
80 or MC	364	150	- - - -	- - - -
100	478	286		
100	443	286	1,000,000	1,000,000
100	634	293		
100	496	286	1,000,000	1,000,000

TABLE 26 (cont.)
Bituminous Coal
Unit-Train or Trainload Movements

(Rates in cents per ton of 2,000 lbs. – Rates include X-295-A)

Origin	Destination	Rate	Shipment Weights (Tons)		Car Ownership
			Minimum	Maximum	
(Southern Illinois Group) Orient Mine No. 3, Ill. Orient Mine No. 6. Ill. Sesser, Ill.	Indiana Harbor, Indiana	173	9,500	12,500	S
(Southern Illinois Group) Inland Mine, Ill.		158	9,500	12,500	S
(Belleville Group) Percy, Ill.	Plaines, Ill.	150.5	7,000	12,600	S
(Belleville Group) Percy, Ill.	Hammond, Ind.	199.5	10,000	----	S
	Waukegan, Ill.	214.5	10,000	----	S
(Belleville Group) Percy, Ill.	Federal, Ill.	76.5	3,500	----	S
(Belleville Group) River King Mine, Ill.	East St. Louis, Ill. (For transshipment beyond by barge)	122	5,500	----	RR
		95	5,500	----	S
(Belleville Group) Lenzburg, Ill.		130	5,500	----	RR
		101	5,500	----	S
(Belleville Group) River King Mine, Ill.	Gary, Ind.	(a)353	10,000	----	RR
		(b)366	10,000	----	RR

Explanation of Reference Marks

(a)	One bill of lading at one time from one consignor from one origin to one consignee at one destination.
(b)	Two bills of lading from one or two consignors at two origins taking the same rate, on a single day to one consignee at one destination.
MC	Marked capacity of car, except when loaded to full visible capacity actual weight will apply.
NT	Net ton of 2,000 tons
RR	Railroad
S	Shipper

TABLE 26 (cont.)

Average Tons Per Car or Tariff Minimum	Distance (miles) Actual	Rate Reduction under Single-Car Rate	Annual Tonnage (Aggregate)	
			Tariff Requirement	Estimated 1972 Tonnage
100	284	389	2,000,000	2,200,000
100	279	404		
100	307	393.5	3,300,000	3,300,000
100	356	344.5	1,200,000	1,200,000
100	377	358.5		
100	84	218.5	1,050,000	1,050,000
100	23	173	2,500,000	3,300,000
100	23	200		
100	33	165		
100	33	194		
100	312	191	1,500,000	1,500,000
100	312	178		

21. *Rate Structure of Lake-Cargo Coal Movement*

Coal moves to the lower Great Lake ports for transshipment by water from both the Appalachian fields and the Illinois-Indiana-Western Kentucky fields.

Coal from origins in eastern Kentucky, Maryland, Ohio, Pennsylvania, Virginia, West Virginia and Tennessee, hereinafter referred to from time to time as "eastern" origins, is transshipped at various ports on Lake Erie for further movement to destination ports on the Great Lakes. The transshipping facilities on Lake Erie are located at Toledo, Sandusky, Lorain, Ashtabula and Conneaut, Ohio. Facilities are maintained at these ports by the Baltimore and Ohio Railroad, and the Penn Central Transportation Company at Toledo through affiliation with the Lakefront Dock and Railroad Terminal Company; at Toledo Dock by The Chesapeake and Ohio Railway Company; at Sandusky Dock by the Norfolk and Western Railway Company; at Lorain by The Baltimore and Ohio Railroad Company; at Ashtabula by the Penn Central Transportation Company and at Conneaut by the Bessemer and Lake Erie Railroad.

Coal originating in Illinois, Indiana and western Kentucky, sometimes referred to as "midwestern" mines or origins, is also marketed on the Great Lakes, reaching the lakes through the port of Chicago, Ill., at the lower end of Lake Michigan.

The primary eastern origin groups are commonly known as the Ohio, Inner Crescent, and Outer Crescent groups.

Table 27 shows the tonnage loaded into vessels at Lake Erie and Lake Ontario, by origin group and district for the years 1967-1971. Table 28 shows lake-cargo tonnage loaded at Lake Erie and Lake Ontario ports.

TABLE 27

Bituminous Coal Loaded at Lake Erie and Lake Ontario, by Origin Group and District (Net Tons)

Origin Group & District	1967	1968	1969	1970	1971
Ohio Group					
Ohio No. 8	5,482,889	4,682,644	5,189,366	4,937,418	3,489,219
Cambridge	338,168	296,836		187,492	317,812

TABLE 27 (cont.)

Bituminous Coal Loaded at Lake Erie and Lake Ontario, by Origin Group and District
(Net Tons)

Origin Group & District	1967	1968	1969	1970	1971
Southern Ohio	51,634	1,427	90,880	351,721	426,824
Total:	5,872,691	4,980,907	5,280,246	5,476,631	4,233,855
Inner Crescent					
Pittsburgh	3,305,087	2,967,228	3,020,569	3,659,042	3,027,992
Moundsville, Westmoreland	234,072	348,443	315,891	468,186	255,413
Connellsville	79,127	31,535	6,842	39,170	3,621
Fairmount	4,952,541	5,583,003	4,811,455	6,334,689	6,409,607
Eastern Kentucky	7,535,820	7,693,947	6,597,430	7,861,750	6,523,635
Kanawha	9,099,291	8,173,790	6,715,947	5,856,995	4,704,186
Kenova-Thacker-Tiller	5,847,558	6,341,832	6,021,937	5,103,987	4,202,282
Total:	31,053,496	31,139,778	27,490,071	29,323,819	25,126,736
Outer Crescent					
New River	120,452	124,783	458,549	203,914	195,917
Pocahontas	4,801,723	4,326,283	4,051,254	4,061,746	3,547,837
Virginian	589,948	799,448	456,190	369,842	291,954
Cumberland, Pied., Elk River, Gauley	106,576	56,255	108,500	210,825	261,211
Total:	5,618,699	5,306,769	5,074,493	4,846,327	4,296,002
Other Districts					
Leetonia	-----	-----	-----	118,588	90,948
Middle	544,263	468,121	320,633	268,715	178,953

TABLE 27 (cont.)

Bituminous Coal Loaded at Lake Erie and Lake Ontario, by Origin Group and District
(Net Tons)

Origin Group & District	1967	1968	1969	1970	1971
Butler-Mercer	476,398	572,152	710,124	563,329	453,593
Freeport	252,247	809,828	808,973	981,620	806,083
Clearfield	98,630	125,915	368,390	454,561	1,659,249
Reynoldsville	593,377	560,380	378,418	454,076	510,450
Sutton	131,074	160,132	181,453	257,983	328,589
Tennessee	1,747	1,246	4,762	46,868	63,935
Grand Total:	44,642,622	44,125,228	40,617,563	42,792,517	37,731,310

TABLE 28

*Bituminous Coal Loaded into Vessels at Lake Erie and Lake Ontario Ports**
(Net Tons)

Railroad & Port	1967	1968	1969	1970	1971
Baltimore & Ohio					
Charlotte	439,938	436,973	375,904	183,013	
Lorain	1,380,122	5,149,940	3,288,064	3,138,682	2,398,056
Toledo	6,448,640	3,395,814	3,633,324	4,274,704	3,728,767
Total	8,268,700	8,982,727	7,297,292	7,596,399	6,126,823
Bessemer & Lake Erie					
Conneaut	6,456,329	6,581,193	6,455,659	7,575,339	7,769,614
Chesapeake & Ohio					
Toledo	18,122,383	15,866,751	12,360,379	11,296,714	7,808,094
Penn Central					
Ashtabula	1,206,001	1,592,335	3,405,767	5,532,449	5,466,388
Toledo	5,003,888	4,325,468	4,314,751	5,910,964	5,931,869
Sodus Point	123,454	-	-	-	-
Total	6,333,343	5,917,803	7,720,518	11,443,413	11,398,257
Norfolk & Western					
Sandusky	5,461,867	6,776,754	6,783,715	4,880,652	4,628,522
GRAND TOTAL	44,642,622	44,125,228	40,617,563	42,792,517	37,731,310

*–Cargo only; excludes bunker fuel.

Source: Ore & coal Exchange

Single-car lake-cargo rates are structured on a differential basis. Ohio origins take the lowest rates with Inner and Outer Crescent origins taking respectively higher rates. Because lake-cargo rates are proportional rates (rates used only as a factor in making a combination through rate), and because of intense competition with midwestern lake-cargo coal, all-rail coal deliveries to northern Great Lakes destinations, and interfuel competition, rates from eastern origins have been held at a relatively low level. Moreover, because of competitive differences between steam and metallurgical coals, rates for those grades of coal have developed at different levels. Table 29 gives rates for steam and metallurgical coal from Ohio No. 8, Inner, and Outer Crescent origins to Sandusky Dock, Toledo and Toledo Dock for transshipment as lake cargo to various northern Great Lake destinations. Table 30 gives rates for transport from specific origins to specific destinations.

The carriers currently maintain lake-cargo refund rates on coal from eastern origins. For many years substantial coal tonnage has moved from the Appalachian and Ohio coal fields to Lake Erie ports for transshipment by boat to ports on Lake Superior and the west bank of Lake Michigan (hereinafter referred to as upper lake ports) for further movement to interior destinations beyond the ports. In decisions of the Interstate Commerce Commission in various Ex Parte general rate increase proceedings, commencing with Ex Parte No. 115, the requirements were that on such rail - lake - rail traffic, the sum of the increases in the rail rates to the lower ports and beyond the upper ports could not exceed the maximum increase authorized for a through all-rail movement from origin to destination.

To comply with the single-increase requirements of the several general increase decisions of the Commission, the railroads have since 1937 maintained lower rates for rail-lake-rail movement than for rail-lake movement to the upper ports, the full rate applicable to the upper ports being collected initially and the lower rate being protected through the medium of a refund upon presentation of satisfactory evidence of movement beyond the upper lake port to interior destinations. Originally, the refund rates had application only if the movement beyond the upper lake port was in rail service. Since 1957, the refund rates have been applicable on traffic moving beyond the upper ports regardless of the mode of transportation. Thus, the current lake tariffs provide that the normal refund rates have application at transportation charges not less than the amount of the refund on coal consigned to the following docks:

> (1) in the United States on Lake Superior, including Sault Ste. Marie, Michigan and the West Bank of Lake Michigan north of the Illinois-Wisconsin State Line and thence transported from such docks (either as coal or as coal briquettes produced from such coal at the docks) to interior destinations in the United States, not more than two years after the date coal was loaded into vessels at Lake Erie ports.

TABLE 29

Statement of Single-Car Rates on Coal to Sandusky Dock, Toledo and Toledo Dock, Ohio, for Transshipment as Lake Cargo*

(This statement does not include any volume or trainload rates; neither does it include the refund rates applicable on traffic moving beyond Lake Superior and westbank Lake Michigan ports)

Terminal Application		A		B		C		D		E		F		G	
Effective	From	M*	O*	M*	O*	M*	O*	M*	O*	M*	O*	M*	O*	M*	O*
8/19/73	Ohio No. 8	451	413	451	372	51	413	451	456	451	413	451	413	451	413
	Inner C.	509	475	509	434	509	475	509	516	509	475	509	475	509	475
	Outer C.	533	499	533	456	533	499	533	540	533	499	533	499	533	499

Terminal Application		H		I		J		K		L		M		N	
Effective	From	M*	O*	M*	O*	M*	O*	M*	O*	M*	O*	M*	O*	M*	O*
8/19/73	Ohio No. 8	451	413	451	436	451	456	451	456	451	372	451	413	447	447
	Inner C.	509	475	509	496	509	516	509	516	509	434	509	475	505	505
	Outer C.	533	499	533	519	533	540	533	540	533	456	533	499	527	527

*M - Metallurgical. O - Other.
Inner C. - Inner Crescent.
Outer C. - Outer Crescent.
*Rates stated in cents per ton.

COLUMN	APPLICABLE ON COAL TO SANDUSKY DOCK, TOLEDO OR TOLEDO DOCK, OHIO, FOR TRANSSHIPMENT AS LAKE CARGO TO THE FOLLOWING DESTINATION TERRITORY
A	Lake Superior.
B	Lake Michigan, west bank of - Milwaukee and Racine, Wisc., only.
C	Lake Michigan, west bank of – Wisconsin points except Milwaukee and Racine, Wisc.
D	Lake Michigan – Illinois and Indiana points only.
E	Lake Michigan – other than Columns B, C and D.
F	St. Marys River (located between Lake Superior and North Channel of Lake Huron).
G	Lake Huron – Rogers City (Calcite), Mich. – Cape Hurd, Ont., line and north thereof, including Georgian Bay.
H	Lake Huron – south of Rogers City (Calcite), Mich. – Cape Hurd, Ont., line, and north of Marine City, Mich. – Courtright, Ont., line on St. Clair River.
I	Between Lake Huron and Lake Erie – Marine City, Mich., and Courtright, Ont., and south thereof to and including Trenton, Mich., and Amherstburg, Ont., at or near mouth of Detroit River.
J	Between Lake Huron and Lake Erie – south of Trenton, Mich. – Amherstburg, Ont., on Detroit River.
K	Lake Erie and Lake Ontario – United States ports.
L	Lake Erie and Lake Ontario – Canadian ports from Port Colborne, Ont., to Prescott, Ont., inclusive.
M	Lake Erie – Canadian ports from Kingsville, Ont., to Port Maitland, Ont.
N	Other Export.

EXPLANATION OF ABBREVIATION: Met. – Applicable on coal for metallurgical or coking purposes.

TABLE 30

Single-Car Rates

Origin District	Destination Port	Final Destination	Rail Mileage	Rate
Big Sandy	Toledo	Inland Wisc.	392	376
Gauley	Conneaut	Inland Wisc.	444	379
Gauley	Toledo	Inland Wisc.	490	398
Middle	Ashtabula Harbor	Little Current, Ont.	173	391
Ohio No. 8	Toledo	Harbor Beach, Mich.	229	413

(2) in the United States, (G) or Canada on Lake Superior, including Sault Ste. Marie, Michigan and Sault Ste. Marie, Ontario, and thence transported from such docks (either as coal or as coal briquettes produced from such coal at the docks) to interior destinations in Canada, not more than two years after the date coal was loaded into vessels at Lake Erie ports. (G) Issued to meet natural gas competition.

The current normal refund, that is, the refund in effect as a direct result of complying with the single increase requirements of the Commission in the various Ex Parte cases, is 68 cents per ton on Ohio No. 8 District origin coal, 74 cents per ton on Inner Crescent coal, and 76 cents per ton on Outer Crescent coal. The highest refunds are 93, 99 and 101 cents per ton from the Ohio No. 8, Inner Crescent and Outer Crescent origins, respectively, and these higher refunds are the result of competitive adjustments.

Table 31 is a statement of normal single-car refund rates. Single-car rates to the same lower lake ports are shown for comparison. The lower lake ports and the single-car rates in Table 31 are identical to those in Table 29.

TABLE 31

Normal Refund Single-Car Rates on Rail-Lake Steam Coal Moving to Lake Superior and Westbank Lake Michigan Ports for Further Movement to Interior Destinations Beyond the Upper Ports

Effective	Ohio No. 8			Inner Crescent			Outer Crescent		
	Rail-Lake	Rail-Lake-*Rail		Rail-Lake	Rail-Lake-*Rail		Rail-Lake	Rail-Lake-*Rail	
	Rate	Refund	Rate	Rate	Refund	Rate	Rate	Refund	Rate
8/19/73	413	68	345	475	74	401	499	76	423

*Also applicable by other modes of transportation beyond Upper Lake Docks.

The terms "rail-lake" and "rail-lake-rail" are used to describe the difference in application of the rates to the Lake Erie port and it should be understood such rates do not include the water haul beyond the Lake Erie port.

In response to competitive pressures from other fuels, other means of transport, and other mine origins, the carriers from eastern mine origins established and maintain annual-volume and trainload lake-cargo rates. The annual-volume method of rate reduction was chosen over conventional types of rate reductions so that revenues from large volumes of coal not subject to competition would not be jeopardized resulting in losses even greater than those threatened by competition. Table 32 gives exemplary rates for annual-volume and trainload shipments together with the particular regulations applicable to each movement.

Lake-cargo coal from Illinois-Indiana-W. Kentucky origins moves to Chicago, Ill., for transshipment to upper Great Lakes destinations. Coal moving via the Chicago docks normally moves by boat to destinations in Wisconsin, Michigan, and Minnesota as far as the City of Duluth. Although single-car lake-cargo rates are still published following the traditional rate patterns, virtually all of the lake-cargo traffic from midwestern origins moves under annual-volume or trainload rates. These rates reflect a long series of rate adjustments responsive to intense competitive pressures rather than distances or group interrelationships. Table 33 shows rates for lake-cargo movements from Illinois-Indiana-W. Kentucky origins via Chicago docks.

TABLE 32

Annual-Volume & Trainload Rates

Origin District	Destination Port	Final Destination	Rate (Cents)	Minimum Consignment	Annual-Volume Requirement	Loading Time (Hr.)	Unloading Time (Hr.)	Amount Under Normal Rate (Cents)
Pittsburgh	Conneaut	Hamilton, Ont.	384	5000 N. T.	N.A.	48	48	21
Big Sandy	Toledo Dock	Ecorse, Mich.	468	5000 N. T.	N.A.	Normal	48	41
Clarksburg	Toledo	Detroit, Mich.	416.5	6000 N. T.	11,000,000 N. T.	24	24	62.5
Gauley	Conneaut	Manitowoc, Wisc., Port Credit, or Toronto, Ont.	352	6000 N. T. [Lake Season] 3500 N. T. [Lake Off-Season]	N.A.	24	48	84
Virginian	Sandusky Dock	Hamilton, Ont.	490	5000 N. T.	N.A.	Normal	48	42
Pittsburgh	Ashtabula Harbor	Toronto, Ont.	280	6000 N. T.	3,000,000 N. T.	24	48	102

TABLE 32 (cont.)

Annual-Volume & Trainload Rates

Origin District	Destination Port	Final Destination	Rate (cents)	Minimum Consignment	Annual-Volume Requirement	Loading Time (Hr.)	Unloading Time (Hr.)	Amount Under Normal Rate (Cents)
Kanawha	Ashtabula Harbor	Port Credit, Ont.	358	6000 N. T.	2,000,000 N. T.	24	48	96
Kanawha	Toledo	Sault St. Marie, Ont.	468	5000 N. T.	N.A.	Normal	48	41
Butler-Mercer	Conneaut	Pt. Washington, Wisc.	287	Single Car	300,000 N. T.	Normal	Normal	82
Kenova	Sandusky Dock	Presque Ile, Mich.	376	Single Car	400,000 N.T.	Normal	48	25

TABLE 33

Lake-Cargo Rates Via Chicago, Ill.

Origin Group	Rate (cents)	Minimum Weight (Tons)	Distance (Miles)	Reduction below Single-Car Rates
Southern Illinois	339	(R)	422	60
Southern Illinois	323	(S)	422	76
Princeton, Indiana	315	(R)	294	60
Princeton, Indiana	300	(S)	294	75
Western Kentucky	375	(R)	421	60
Western Kentucky	363	(S)	421	72

(R)–7,000 tons, not more than 12,000 tons.
(S)–Two 7,000-ton or one 10,000-ton train.

22. *Rate Structure on Coal to the Southeast*

The southeastern states are one of the largest coal consuming areas in the Nation. In 1971 coal consumption totaled 123,742,000 tons. Over the 10 years from 1962 through 1971, electric utilities in the Southeast have shown a dramatic increase in consumption and now are the largest coal consumers by a large margin. Table 34 shows coal consumption from 1962 through 1971 by consumer class. Also included is an index of change in consumption taking 1962 as the base year.

TABLE 34

Consumption In Eight Southeastern States,[1]
1962 Through 1971,
By Class Of Consumer

	Electric Utilities		Coke & Gas		Retailers		Others	
		Index		Index		Index		Index
1962	49,170	100	7,328	100	4,414	100	13,712	100
1963	55,849	114	7,689	105	4,429	100	14,835	108
1964	59,196	120	8,599	117	3,816	86	14,790	108
1965	62,098	126	9,463	129	3,419	77	16,010	117
1966	70,959	144	9,599	131	3,253	74	16,455	120
1967	81,041	165	10,136	138	2,985	68	16,551	121
1968	80,156	163	9,567	131	3,068	70	15,881	116
1969	83,919	171	10,251	140	2,926	66	14,609	107
1970	93,329	190	10,326	141	2,894	66	14,749	108
1971	99,869	203	9,171	125	2,049	46	12,653	92
		+103%		+25%		- 54%		- 8%

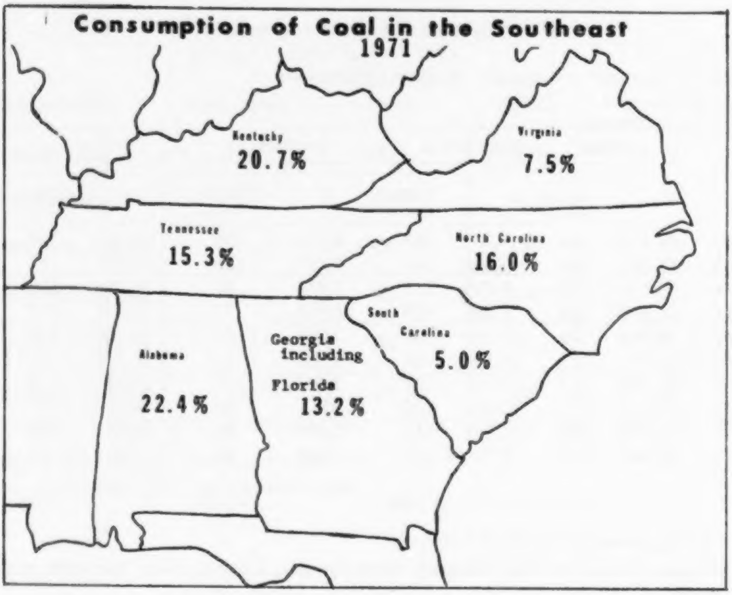
Total consumption: 123,742,000 tons

[1] - Alabama, Georgia, Florida, Kentucky, North Carolina, South Carolina, Tennessee, and Virginia.

Figure G graphically indicates the percentage of coal consumed in each of the southeastern states.

345 I.C.C.

Figure G


Consumption of Coal in the Southeast
1971
Kentucky
20.7%
Virginia
7.5%
Tennessee
15.3%
North Carolina
16.0%
South
Carolina
5.0%
Alabama
22.4%
Georgia
including
Florida
13.2%

The largest proportion of bituminous coal consumed at points in the Southeast is generally drawn from mine origins in West Virginia, Virginia, eastern and western Kentucky, eastern and southern Tennessee and Alabama. A relatively small amount is also drawn from mine origins in southern Illinois and southern Indiana. Table 35 gives the production statistics for the southeastern supply area. The 1971 production represents an increase of 44 percent over the 1954 production for these same states.

TABLE 35

Southeastern Supply Area Production
(1,000 net tons)

1971

State	Production	
	Tons	Percent
1. Alabama	17,945	5
2. Illinois	58,402	16
3. Indiana	21,396	6
4. Kentucky	119,389	32
5. Tennessee	9,271	2
6. Virginia	30,628	8
7. West Virginia	118,258	31
Total	375,289	100

The single-car rate structure on coal in the Southeast is very complex and the rates themselves, whether they were voluntarily established or Commission prescribed, were made giving cognizance to many factors such as distance, coal's competition with other fuels, competition between base groups, competition between destination territories and destination groups within those territories.

Another integral part of the rate structure comes from the intrastate rates published on coal moving solely within the southern coal producing states of Alabama, Kentucky and Tennessee. Here we find that in a great number of instances the state regulatory agencies having jurisdiction have prescribed specific rates, or basis for rates, on this traffic. We also find that the intrastate rates from the different origin groups in Kentucky, for example, are not differentially related one to the other.

Interstate single-car rates to the Southeast are constructed on a group and differentially related origin and grouped destination basis. Base groups vary depending upon the destination. The Southeast is divided into zones. The zones are used to determine the base, or nearest, mine groups, with other more distant mine groups being differentially related to the base groups. The three historical base groups to Carolina Territory have been Pocahontas, Southwest Virginia, and Lake City. When the base group rates to a zone are determined. the other mine groups are either equalized with those rates from the base group or are higher by stated differentials.

It was not until the late 1940's that one-factor rates were established from mine origins in western Kentucky and southern Illinois to destinations in the

Southeast. Prior to this time any coal which moved did so on combinations of local rates. Since coal from these groups is generally inferior in quality to that mined in the Appalachian districts, most of the one-factor rates established were to destinations where steam electric generating plants were located, which could utilize the poorer quality coal. Rates on coal from these origins bear no fixed relationship to rates from Appalachian origins.

There are two large mine groups in eastern Kentucky, namely the Hazard group and the Elkhorn group, from which virtually no one-factor commercial single-car rates are published to destinations in the Southeast except to destinations in the State of Kentucky. Consequently, there is very little coal moved southward in single-car lots, and what little that does moves on combination rates.

The few rates published from southern Indiana origin groups to destinations in the Southeast bear no fixed relationship to any other mine group from which rates are published to the same destinations.

Table 36 shows single-car rates from those significant mine groups from which rates are published to nine southeastern destinations. The destinations indicate the rate structure to a broad geographical spread and a variety of customers. The presentation in Table 35 shows the rate structure not only from the Appalachian fields, including Alabama, but also from western Kentucky.

The destinations selected are:

Destination	Consumer
1. Catawba, N.C.	Electric Utility
2. Terrell, N.C.	Electric Utility
3. Canadys, S.C.	Electric Utility
4. Krannert, Ga.	Electric Utility
5. Harllee, Ga.	Electric Utility
6. Brown, Ky.	Electric Utility
7. Tampa, Fla.	Electric Utility
8. Birmingham, Ala.	Metallurgical Coal
9. Kingsport, Tenn.	Industrial Receiver

TABLE 36

Representative Single-Car Rates

(cents per ton)

Destination Origin Railroad & Group	Catawba N.C.	Terrell N.C.	Canadys S.C.	Krannert Ga.	Harllee Ga.	Brown Ky.	Tampa Fla.	Birmingham Ala.	Kingsport Tenn.
C&O Rwy. New River	A-560 B-661	623	A-610 B-711					(1) 654 661	
Kanawha	A-574 B-673	636	A-623 B-724					(1) 666 673	
Big Sandy	A-545 B-645	619	A-607 B-707	609			A-688 B-893	(1) 666 673	A-250 B-344
CC&O RR. S.W. Va. 1	A-500 B-594	571	A-560 B-653	A-423 B-556			A-632 B-823	633	A-213 B-307
N&W Rwy. Virginian	A-560 B-661		A-610 B-711					(1) 654 661	438
Pocahontas	A-560 B-661		A-610 B-711	734				(1) 654 661	438

TABLE 36 (cont.)

Representative Single-Car Rates

(cents per ton)

Destination / Origin Railroad & Group	Catawba N.C.	Terrell N.C.	Canadys S.C.	Krannert Ga.	Harllee Ga.	Brown Ky.	Tampa Fla.	Birmingham Ala.	Kingsport Tenn.
Upper Buchanan	A-560 B-661		A-610 B-711	734				(1) 654 661	438
Tug River	A-560 B-661		A-610 B-711	734				(1) 654 661	438
Clinch Valley No. 1	A-560 B-661		A-610 B-711	734				(1) 654 661	438
Clinch Valley No. 2	A-521 B-622	614	A-586 B-686	582			A-663 B-869	(1) 562 661	A-221 B-320
Tiller	A-521 B-622	614	A-586 B-686	582			A-663 B-869	(1) 562 661	A-221 B-320
Thacker	A-574 B-652		A-623 B-724	748				(1) 666 673	458
Kenova	A-574 B-652		A-623 B-724	748				(1) 666 673	458
Kanawha	A-574 B-652		A-623 B-724						

L&N RR Wind Rock	A-560 B-594	571	A-560 B-653	A-343 B-484	640		A-573 B-797	579	
LaFollette	A-508 B-602	579	A-567 B-659	A-353 B-493	647		A-580 B-804	585	A-286 B-374
Jellico-Middlesboro	A-514 B-608	584	A-573 B-665	A-363 B-501	653	A-271	A-585 B-810	592	A-271 B-359
Harlan	A-521 B-615	591	A-580 B-673	A-379 B-516	665	A-276	A-598 B-823	607	A-242 B-330
Sparta	A-553 B-646	646	A-580 B-673	A-343 B-484	640		A-573 B-797	579	
Palmer	A-547 B-640	640	A-574 B-667	A-336 B-478	634		A-565 B-790	572	
Whitwell	A-541 B-633	633	A-567 B-659	A-324 B-470	627		A-571 B-785	564	
Whiteside	A-534 B-626	626	A-560 B-653	A-314 B-458	620		A-554 B-779	545	
Western Kentucky	A-790 B-790			A-410 B-629	739		A-618 B-889	613	
S.W. Va. 4		571	A-560 B-653				A-598 B-823		A-213 B-307
Alabama 1				A-343 B-484	620		A-546 B-770	Varies Intrastate	

TABLE 36 (cont.)
Representative Single-Car Rates
(cents per ton)

Destination / Origin Railroad & Group	Catawba N.C.	Terrell N.C.	Canadys S.C.	Krannert Ga.	Harllee Ga.	Brown Ky.	Tampa Fla	Birmingham Ala.	Kingsport Tenn.
Hazard					789	A-308		723	
Elkhorn						A-321		723	
Monterey							A-573 B-797		
SRS Lake City	A-500 B-594		A-560 B-653	A-343 B-484	640	448	797	(1) 526 A-475 B-579	
Pioneer	A-508 B-602		A-567 B-659	A-353 B-493	647	456	804	(1) 534 A- 483 B- 584	
Jellico	A-514 B-608		A-573 B-665	A-363 B-501	653	465	810	(1) 541 A- 489 B- 592	

Middlesboro	A-514 B-608		A-573 B-665	A-363 B-501	653	478	810	(1) 541 A- 489 B- 592	
H & NE	A-514 B-608		A-560 B-653	A-343 B-484	640			(1) 526 A- 475 B- 579	
Glen Mary	A-521 B-615		A-560 B-653	A-343 B-484	640			(1) 526 A- 475 B- 579	
Rathburn	A-521 B-615		A-560 B-653	A-314 B-458	620			(1) 504 A- 452 B- 556	
Dayton	A-521 B-615		A-560 B-653	A-324 B-470	627			(1) 512 A- 459 B- 592	
Crab Orchard	A-574 B-615							579	
Pine Knot	A-535 B-627		A-573 B-665	A-363 B-501	653		810	(1) 541 A- 489 B- 592	
Somerset	A-547 B-640		A-585 B-678	A-379 B-516	665		823	(1) 554 A- 503 B- 607	

TABLE 36 (cont.)
Representative Single-Car Rates
(cents per ton)

Destination / Origin Railroad & Group	Catawba N.C.	Terrell N.C.	Canadys S.C.	Krannert Ga.	Harllee Ga.	Brown Ky.	Tampa Fla.	Birmingham Ala.	Kingsport Tenn.
S.W. Va. 3	A-500 B-594	571	A-560 B-653	A-379 B-516			A-598 B-823		A-213 B-307
S.W. Va. 6		571	A-560 B-653	A-379 B-516	665		B-823	(1) 546 633	A-213 B-307
S.W. Va.		571	A-560	A-379 B-516	655		A-598 B-823	(1) 546 633	A-213 B-307
S.W. Va. 6C	A-500 B-594	571					B-823		A-213 B-307
Alabama 1, 2, 2A, 3				A-343 B-484	620		770	Varies by intrastate origin	
Alabama 4, 4A				A-363 B-501	633		785	264	

Alabama 5				A-374 B-511	640		790	264	
SRS 51						493			
SRS 52						A-278 B-426			
SRS 54						434			
K & T 55						A-247 B-346			
SRS 57						A-278 B-416			
SRS 100						A-247 B-346			
SRS 101-103						A-247 B-346			
SRS 104						A-247 B-346			
SRS 105, 113						A-278 B-426			
SRS 114, 115						434			
SRS 116, 123						347			

TABLE 36 (cont.)
Representative Single-Car Rates
(cents per ton)

Destination / Origin Railroad & Group	Catawba N.C.	Terrell N.C.	Canadys S.C.	Krannert Ga.	Harllee Ga.	Brown Ky.	Tampa Fla.	Birmingham Ala.	Kingsport Tenn.
SRS 124						A-106 B-125			
S&L-SF Rwy. Alabama 1		686	A-585 B-678	A-343 B-484	620		770	176	
Alabama 2		697	A-598 B-691	A-363 B-501	633		785	187	
Alabama 3		706	A-605 B-697	A-376 B-511	640		790	187	
ICG RR Alabama 1, 2				A-343 B-484	620		770	246	
SCL RR Birmingham							700		

Woodward							700		
Jacksonville							506		

A - Fine coal
B - Other coal
(1) - Applicable only on metallurgical coal

Another important facet of the rate structure is the destination grouping which results in the blanketing of a geographic area with the same rate. This is particularly true in the Carolina Territory where there are approximately 130 such destination groups observed in establishing single-car rates. It is less a factor in ratemaking to other southeastern areas.

This destination grouping had its start early in the formulation of the rate structure, when the carriers would voluntarily establish, or the Commission would prescribe, rates to certain destinations. The rates established were generally lower than those existing to intermediate points, and since in many cases the Commission denied or granted very limited fourth section relief the carriers had to hold the low rate as maximum at such intermediate destinations. In view of the intense competition among related mine origin groups, rates would also be established from them, and because of the myriad of competitive routes the protected rate would in some cases involve many intermediate destinations. As time passed, and more and more rates were established or prescribed, the destination grouping principle was accepted as part and parcel of the rate structure, and the rates established or prescribed were published to all points in the destination groups. The number of destinations in each group range from 1 in such groups as Lost Cove, N.C., Greenlee, N.C., and Pickens, S.C., to a high of 199 points in the Plymouth, N.C., group. The rates to these destination groups bear no relationship one to the other.

The period from 1954 through 1966 was an era of rate reductions on coal in the Southeast primarily to forestall the increased use of natural gas as a fuel in lieu of coal. These rate adjustments were in the form of downward revisions in the single-car rates on fine coal, and also, by introduction into the rate structure of rates dependent in their application upon the shipment of a stated annual volume and other conditions of transportation. To a lesser extent, concentration rates, dependent in their application upon the assembling of single cars at a concentration point for multiple-car movement beyond, were brought into the rate structure. In addition, trainload and unit-train rates have seen increasing use, but these rates will be discussed separately.

The method of competitive pricing which became increasingly popular was the annual-volume rate. This form of ratemaking was used extensively by the railroads in their efforts to compete with natural gas pipelines. In times past, one of the strongest competitive forces bearing upon the transportation of coal by railroad was the sale of interruptible or "dump" gas by pipelines directly to the consumer, usually during the summer months. Large industrial users and power companies purchased interruptible gas in an effort to save on fuel costs. To the extent dump gas replaces coal as a fuel, it may have a twofold adverse effect on the railroads. It not only stops or curtails the movement via rail, with the concomitant loss of revenue, but it destroys the maximum utilization of railroad freight car equipment which the carriers have purchased in anticipation of handling coal without drastic seasonal interruptions.

The annual-volume rate permits the rail carrier to plan its equipment needs and serves as an aid in avoiding either an oversupply or an undersupply of freight cars. The difference between the single-car rate and the annual-volume rate has served as a real incentive for the customer to plan its transportation and fuel requirements well in advance. Thus, the annual volume rate may be an effective deterrent to the purchase of interruptible gas, and the rail carrier is no longer used on a standby basis. For the railroads, this method of pricing has been an effective tool with which the carriers have experienced considerable success in competing with natural gas, especially during the period of the early 1960's.

In addition, the annual-volume concept has sometimes been coupled with other transportation conditions designed to achieve economies in coal handling. In this way the carriers have attempted to offset, to the extent possible, the effect of revenue losses from downward adjustments necessitated by competition. For example, rates may be subjected to an annual-volume minimum of 350,000 tons, and the lowest published rates applied in cars loaded to full visible capacity but not less than 100 tons per car. Rates are also made subject to reduced free time for loading and unloading. Cost savings are realized through a better turn-around time and maximum utilization of equipment.

Unit-train and trainload rates enjoy an ever-increasing significance in the Southeast rate structure. The difference between the two concepts has been described previously. One technical feature of note used in several unit train operations is use of a transloader at Appalachia, Va., described at page 113, *supra.*

Some of the basic factors involved in connection with Southern's unit trains have been shown in Table 13, *supra.* These are the unit trains operating in interstate commerce to electric utilities in the Southeast.

Those unit trains originating at Appalachia, Va., are loaded at the transloader and, in addition to the unit-train tariff charge, the utility must pay the gathering rates into the transloader.

These gathering rates are shown in Table 37 at the Ex Parte No. 295 level, i.e., as of September 1, 1973.

TABLE 37

	RATES	
	TO : Appalachia, Va., when for rail movement beyond.	
	Cubic capacity of car	Rate
RATES (In cents per car based on cubic capacity of car as shown regardless of weight)	Cars not over 1700 cu. ft.	2037
	Cars over 1700 cu. ft., but not over 1900 cu. ft.	2303
	Cars over 1900 cu. ft., but not over 2100 cu. ft.	2421
	Cars over 2100 cu. ft., but not over 2300 cu. ft.	2656
	Cars over 2300 cu. ft., but not over 2500 cu. ft.	2922
	Cars over 2500 cu. ft., but not over 2700 cu. ft.	3129
	Cars over 2700 cu. ft., but not over 2900 cu. ft.	3366
	Cars over 2900 cu. ft., but not over 3100 cu. ft.	3632
	Cars over 3100 cu. ft., but not over 3300 cu. ft.	3838
	Cars over 3300 cu. ft., but not over 3500 cu. ft.	4104
	Cars over 3500 cu. ft., but not over 3700 cu. ft.	4339
	Cars over 3700 cu. ft., but not over 3900 cu. ft.	4579
	Cars over 3900 cu. ft., but not over 4100 cu. ft.	4842
	Cars over 4100 cu. ft., but not over 4300 cu. ft.	--
	Cars over 4300 cu. ft., but not over 4500 cu. ft.	--

Table 38 shows representative multiple-car, annual-volume, unit-train, and trainload rates to eight southeastern destinations.

A review of the annual-volume, multiple-car, trainload, and unit-train rates in Table 38 shows: (1) even the origin group relationship was completely disregarded in some instances when annual-volume rates were established, and in other instances no annual-volume rates were ever established from some groups, (2) since the volume rates generally are applicable only to a single destination or to a few destinations, the historic destination group basis of making rates was not adhered to, and (3) in the case of trainload and unit-train rates we find that both the origin and destination grouping principles have been completely disregarded in most instances when publishing such rates.

It is also apparent from Table 38 that the annual-volume, multiple-car, trainload, and unit-train rates bear no relationship to each other.

Thus, we find that there is no one rate structure on coal to the Southeast, but rather several separate and distinct pricing techniques each of which is designed to take care of the particular needs of shippers, receivers, and carriers.

TABLE 38

Rates on bituminous fine coal, multiple-car or annual-volume (Column C) and bituminous coal, trainload or unit-train (Column D)*

TO
CATAWBA, N.C.

Origin Group Name and No.		C	D
C&O Rwy.			
New River	- Group 1	E 481 F 481 G 481 H 481 I 481	-
Kanawha (NOTE 1)	- Group 2, 3	E 493 F 493 G 493 H 493 I 493	-
Big Sandy	- Group 5	-	-
CC&O RR.			
S.W. Va.	- Group 1	-	-
N&W Rwy.			
Virginian (NOTE 2) Pocahontas Upper Buchanan Tug River Clinch Valley #1	- Group 1) - Group 3) - Group 3) - Group 3) - Group 3)	E 475 F 475 G 475 H 475	-
Clinch Valley # 2 Tiller	- Group 2, 6B) - Group 2, 6B)	E 488 F 488 G 488 H 488 I 488	-
Thacker Kenova Kanawha (NOTE 3)	- Group 5) - Group 6) - Group 9)	E 488 F 488 G 488 H 488 I 488	-

*Rates stated in cents per net ton.

TABLE 38 (cont.)

TO
CATAWBA, N.C.

Origin Group Name and No.		C	D
SRS			
		E 423	
Lake City	- Group 27)	F 372	(1)(2) 222
S. W. Va.	- Group 3)	G 364	(1)(3) 215
S. W. Va.	- Group 6C)	H 357	(1)(4) 210
		I 352	
		E 434	
		F 379	
Pioneer	- Group 28	G 374	-
		H 366	
		I 359	
		E 439	
Jellico	- Group 29)	F 385	
Middlesboro	- Group 30)	G 379	-
H&NE	- Group 38)	H 374	
		I 366	
		E 447	
Glen Mary	- Group 34)	F 393	
Rathburn	- Group 36)	G 386	
Dayton	- Group 39)	H 380	
		I 375	
Crab Orchard	- Group 35	-	-
		E 458	
		F 406	
Pine Knot	- Group 37	G 401	-
		H 394	
		I 389	
		E 473	
		F 419	
Somerset	- Group 40	G 413	-
		H 408	
		I 402	

TABLE 38 (cont.)

EXPLANATION OF REFERENCE MARKS:

E - Annual volume less than 500,000 tons.
F - Annual volume 500,000 tons to 1,000,000 tons.
G - Annual volume 1,000,001 tons to 2,000,000 tons.
H - Annual volume 2,000,001 tons to 3,000,000 tons.
I - Annual volume 3,000,001 tons and over.
(1) - Applicable only from Appalachia, Va.
(2) - Annual volume 1,100,000 tons (6,130 ton, 7,354 ton or 8,600 ton trainloads).
(3) - Annual volume 1,540,000 tons (8,600 ton or 9,800 ton trainloads).
(4) - Annual volume 1,750,000 tons (9,800 ton trainload).
NOTE 1 - Includes rates from origins on Kanawha Central Ry. and Winifrede RR.
NOTE 2 - Includes rates from origins on PCW (NF&G - Group 1).
NOTE 3 - Applicable only from origins on Kelly's Creek RR, Kelly's Creek and Northwestern RR and PCW.

TO
TERRELL, N.C.

Origin Group Name and No.		C	D
C&O Rwy.			
New River	- Group 1	E 475	-
		F 475	
		G 475	
		H 475	
		I 475	
Kanawha (NOTE 1)	- Group 2, 3	E 488	-
		F 488	
		G 488	
		H 488	
		I 488	
Big Sandy	- Group 5	E 472	
		F 413	(3)(2) J 392
		G 407	(3)(2) K 386
		H 401	(3)(2) L 386
		I 392	
CC&O RR.			
S. W. Va.	- Group 1	E 418	
		F 364	(2)φJ 284 (2)†J 294
		G 357	(2)φK 279 (2)†K 289
		H 352	(2)φL 279 (2)†L 389
		I 346	

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TABLE 38 (cont.)

TO
TERRELL, N.C.

Origin Group Name and No.		C	D
N&W Rwy.			
Virginian (NOTE 2)	- Group 1)	E 475	
Pocahontas	- Group 3)	F 475	
Upper Buchanan	- Group 3)	G 475	-
Tug River	- Group 3)	H 475	
Clinch Valley # 1	- Group 3)	I 475	
		E 448	
		F 389	(3)(2) J 364
Clinch Valley # 2	- Group 2, 6B	G 392	(3)(2) K 355
Tiller	- Group 2, 6B	H 375	(3)(2) L 355
		I 370	
		E 488	
Thacker	- Group 5)	F 488	
Kenova	- Group 6)	G 488	-
Kanawha (NOTE 3)	- Group 9)	H 488	
		I 488	
L&N RR.			
		E 432	
		F 432	
Wind Rock	- Group 1	F 432	-
		H 432	
		I 432	
		E 439	
		F 439	
La Follette	- Group 2	G 439	-
		H 439	
		I 439	
		E 446	
Jellico-		F 391	(4)φ * J 383
Middlesboro	- Group 3	G 383	(4)φ * K 377
		H 377	(4)φ * L 343
		I 372	

TABLE 38 (cont.)

Origin Group Name and No.		C	D
L&N RR. (Cont'd.)			
		E 453	
		F 398	(4)φ(1) J 392
Harlan	- Group 4	G 392	(4)φ(1) K 384
		H 384	(4)φ(1) L 333
		I 378	
		E 510	
		F 510	
Sparta	- Group 11	G 510	-
		H 510	
		I 510	
		E 504	
		F 504	
Palmer	- Group 12	G 504	-
		H 504	
		I 504	
		E 496	
		F 496	
Whitwell	- Group 13	G 496	-
		H 496	
		I 496	
		E 489	
		F 489	
Whiteside	- Group 14	G 489	-
		H 489	
		I 489	
		E 432	
		F 375	
S. W. Va.	- Group 4	G 368	-
		H 361	
		I 355	

EXPLANATION OF REFERENCE MARKS:

E - Annual volume less than 500,000 tons.
F - Annual volume 500,000 tons to 1,000,000 tons.
G - Annual volume 1,000,001 tons to 2,000,000 tons.
H - Annual volume 2,000,001 tons to 3,000,000 tons.
I - Annual volume 3,000,001 tons and over.

TABLE 38 (cont.)

TO
TERRELL, N.C.

J - Annual volume not less than 1,600,000 tons (NOTE 4).
K - Annual volume not less than 2,500,000 tons (NOTE 4).
L - Annual volume not less than 3,600,000 tons (NOTE 5).

NOTE 1 - Includes rates from origins on Kanawha Central Rwy. and Winifrede RR.

NOTE 2 - Includes rates from origins on PCW (NF&G - Group 1).

NOTE 3 - Applicable only from origins on Kelly's Creek RR, Kelly's Creek and Northwestern RR and PCW.

NOTE 4 - Combined annual volume at Riverbend and Terrell, N.C.

NOTE 5 - Combined annual volume at Riverbend, N. C., Terrell, N. C., and Pelzer, S. C.

EXPLANATION OF REFERENCE MARKS:

(1) - Applicable only from Brookside, Highsplint and Jack, Ky.
(2) - 5,000-ton trainload.
(3) - From not more than three (3) origins, in a single group.
ϕ - From not more than one (1) origin, in a single group.
† - From not more than four (4) origins, in a single group.
* - Applicable only from Little Creek, Ky.
(4) - 5,760-ton trainload.

TO
CANADYS, S.C.

Origin Group Name and No.		C	D	
		(1)	(2)	(3)
C&O Rwy.				
New River	- Group 1	539	-	-
Kanawha (NOTE 1)	- Group 2, 3	552	-	-
Big Sandy	- Group 5	536	(4) 454	(4) 449
CC&O RR.				
S. W. Va.	- Group 1	479	(5) 365	(5) 360

TABLE 38 (cont.)

Origin Group Name and No.		C	D	
		(1)	(2)	(3)
N&W Rwy.				
Virginian (NOTE 2)	- Group 1	539	-	-
Clinch Valley # 2	- Group 2, 4, 6B	514	(4) 434	(4) 428
Tiller	- Group 2, 5, 6B	514	(4) 434	(4) 428
Pocahontas	- Group 3	539	-	-
Upper Buchanan	- Group 3	539	-	-
Tug River	- Group 3	539	-	-
Clinch Valley # 1	- Group 3	539	-	-
Thacker	- Group 5	552	-	-
Kenova	- Group 6	552	-	-
Kanawha (NOTE 3)	- Group 9	552	-	-
L&N RR.				
Wind Rock	- Group 1	492	-	-
La Follette	- Group 2	500	-	-
Jellico-Middlesboro	- Group 3	506	(4) 418	(4) 413 (6) 398
Harlan	- Group 4	513	(4) 420	(4) 413 (6) 398
Sparta	- Group 11	513	-	-
Palmer	- Group 12	507	-	-
Whitwell	- Group 13	500	(4) 408	(4) 402 (6) 385
Whiteside	- Group 14	492	-	-
S.W. Va.	- Group 4	492	-	-
SRS				
Lake City	- Group 27	479		-
Pioneer	- Group 28	486		-
Jellico	- Group 29	491		-
Middlesboro	- Group 30	491		-
Glen Mary	- Group 34	479		-
Rathburn	- Group 36	479		-
Pine Knot	- Group 37	491		-
H&NE	- Group 38	479		-
Dayton	- Group 39	479		-
Somerset	- Group 40	506		-
S.W. Va.	- Group 3	479		-
S.W. Va.	- Group 6	479		-
S.W. Va.	- Group 6A	479		-

TABLE 38 (cont.)

TO
CANADYS, S.C.

Explanation of Reference Marks:

(1) - Annual volume 750,000 tons.
(2) - Annual volume 1,500,000 tons (5,000 ton trainload).
(3) - Annual volume 2,000,000 tons (5,000 ton trainload).
(4) - Not more than 3 origins.
(5) - Not more than 4 origins.
(6) - Not more than 1 origin.

NOTE 1 - Includes rates from origins on Kanawha Central Ry. and Winifrede RR.

NOTE 2 - Includes rates from origins on PCW (NF&G - Group 1).

NOTE 3 - Applicable only from origins on Kelly's Creek RR, Kelly's Creek and Northwestern RR, and PCW.

TO
KRANNERT, GA.

Origin Group Name and No.		C	D
C & O Rwy.			
Big Sandy	- Group 5	-	-
CC&O RR.			
S. W. Va.	- Group 1	-	-
N&W Rwy.			
Clinch Vally # 2	- Group 2, 6B	-	-
Tiller	- Group 2, 6B	-	-
Pocahontas	- Group 3	-	-
Upper Buchanan	- Group 3	-	-
Tug River	- Group 3	-	-
Clinch Valley #1	- Group 3	-	-
Thacker	- Group 5	-	-
Kenova	- Group 6	-	-
ICG RR.			
Alabama	- Group 1, 2	-	-
StL-SF Rwy.			
Alabama	- Group 1	-	-
Alabama	- Group 2	-	-
Alabama	- Group 3	-	-

TABLE 38 (cont.)

Origin Group Name and No.		C	D
L&N RR.			
Wind Rock	- Group 1	-	-
La Follette	- Group 2	-	-
Jellico-Middlesboro	- Group 3	-	-
Harlan	- Group 4	-	-
Sparta	- Group 11	-	-
Palmer	- Group 12	-	-
Whitwell	- Group 13	-	-
Whiteside	- Group 14	-	-
Alabama	- Group 1	-	-
Western Ky.	- Group 3	(1) 382	-
SRS			
Lake City	- Group 27	-	-
Pioneer	- Group 28	-	-
Jellico	- Group 29	-	-
Middlesboro	- Group 30	-	-
Glen Mary	- Group 34	-	-
Rathburn	- Group 36	-	-
Pine Knot	- Group 37	-	-
H&NE	- Group 38	-	-
Dayton	- Group 39 -	-	
Somerset	- Group 40	-	-
S. W. Va.	- Group 3	-	-
S. W. Va.	- Group 6	-	-
S. W. Va.	- Group 6A	-	-
Alabama	- Group 1,2,2A,3	-	-
Alabama	- Group 4, 4A	-	-
Alabama	- Group 5		
Princeton, Ind. Group		(2) 573 (3) 491	(6)(4) 377 (6)(5) 343

EXPLANATION OF REFERENCE MARKS:

(1) - Annual volume 450,000 tons.

(2) - Multiple-car rate - Applicable in lots of not less than 1,000 tons, minimum weight of 200,000 pounds per car.

(3) - Annual-volume rate - Applicable to minimum of 475,000 tons per annum.

(4) - Minimum annual volume 1,000,000 tons. Subject to 10,000 tons per trainload of not more than 100 cars of not less than 100 tons marked capacity.

(5) - Minimum annual volume 1,500,000 tons. Subject to 10,000 tons per trainload of not more than 100 cars of not less than 100 tons marked capacity.

(6) - Applies from Enosville, Ind., only.

TO
HARLLEE, GA.

Origin Group Name and No.		C	D	
ICC RR.				
Alabama	- Group 1, 2		-	
St.L-SF Rwy.				
Alabama	- Group 1	-	-	
Alabama	- Group 2	-	-	
Alabama	- Group 3	-	-	
L&N RR.				
Wind Rock	- Group 1	(1) 380	-	
La Follette	- Group 2	(1) 389	-	
			Col. 1	Col. 2
Jellico-Middlesboro	- Group 3	(1) 394	(2)(3) 356 (2)(4) 317	(2)(3) 345 (2)(4) 309
Harlan	- Group 4	(1) 408	-	-
Hazard	- Group 5	-	(5)(3) 484 (5)(4) 423	(5)(3) 473 (5)(4) 415
Sparta	- Group 11	(1) 380	-	
Palmer	- Group 12	(1) 375	-	
Whitwell	- Group 13	(1) 366	-	
Whiteside	- Group 14	(1) 358	-	
Alabama	- Group 1	-	-	
Western Ky.	- Group 3	(1) 513	-	
SRS				
Lake City	- Group 27	(1) 380	-	
Pioneer	- Group 28	(1) 389	-	
Jellico	- Group 29	(1) 394	(6)(7) 231 (6)(8) 220	
Middlesboro	- Group 30	(1) 394	-	
Glen Mary	- Group 34	(1) 380	-	
Rathburn	- Group 36	(1) 358	-	
Pine Knot	- Group 37	(1) 394	-	
H&NE	- Group 38	(1) 380	-	
Dayton	- Group 39	(1) 366	-	
Somerset	- Group 40	(1) 408	-	
S. W. Va.	- Group 3	(1) 408	-	
S. W. Va.	- Group 6	(1) 408	-	
S. W. Va.	- Group 6A	-	-	
Alabama - Group 1, 2, 2A, 3		-	-	
Alabama - Group 4, 4A		-	-	
Alabama - Group 5		-	-	

TABLE 38 (cont.)

Explanation of Reference Marks:

Col. 1 - Annual volume 700,000 tons, 6,500-ton trainload.
Col. 2 - Annual volume 1,400,000 tons, 5,500-ton trainload.
(1) - 500 ton concentration, annual volume 350,000 tons.
(2) - Applicable only from Levi, Ky.
(3) - Carrier furnished equipment.
(4) - Shipper furnished equipment.
(5) - Applicable only from Arnold and/or Wahoo, Ky.
(6) - Applicable only from Arco, Tenn.
(7) - Annual volume 500,000 tons, 5,000-ton trainload.
(8) - Annual volume 1,400,000 tons, 10,000-ton trainload.

NOTE 1 - Includes rates from origins on Kanawha Central Rwy. and Winifrede RR.
NOTE 2 - Includes rates from origins on PCW (NF&G - Group 1).
NOTE 3 - Applicable only from origins on Kelly's Creek RR, Kelly's Creek and Northwestern RR and PCW.

TO
BROWN, KY.

Origin Group Name and No.		C	D
L&N RR.			
Jellico-		(4) 257	-
Middlesboro	- Group 3	(1)(4) 252	
Harlan	- Group 4	(4) 262	-
		(1)(4) 257	
Hazard	- Group 5	-	-
Elkhorn	- Group 6	-	-
SRS			
Lake City	- Group 27	-	-
Pioneer	- Group 28	-	-
Jellico	- Group 29	-	-
Middlesboro	- Group 30	-	-
SRS - Group 51		-	-
SRS - Group 52		-	-
SRS - Group 54		-	-
K&T - Group 55		(2) 198	-
		(3) 164	
SRS - Group 57		-	-
SRS - Group 100		(2) 198	-
		(3) 164	-
SRS - Groups 101 - 103		-	-
SRS - Group 104		(2) 198	-
		(3) 164	-

TABLE 38 (cont.)
TO
BROWN, KY.

Origin Group Name and No.	C	D
SRS (Cont'd.)		
SRS - Groups 105, 113	-	-
SRS - Groups 114, 115	-	-
SRS - Groups 116, 123	-	-
SRS - Group 124	(4) 92 (1)(4) 87	-

Explanation of Reference Marks:

(1) - Minimum weight 180,000 lbs.
(2) - Annual volume 120,000 tons.
(3) - Annual volume 500,000 tons.
(4) - Applicable to annual-volume tonnage in excess of 500,000 tons.

TO
BIRMINGHAM, ALA.

Origin Group Name and No.		C	D
C&O Rwy.			
New River	- Group 1	(2) 617	-
Kanawha (NOTE 1)	- Group 2, 3	(2) 629	-
Big Sandy	- Group 4, 5	(2) 629	-
CC&O RR.			
S. W. Va.	- Group 1	(2) 514	-
N&W Rwy.			
Virginian (NOTE 2)	- Group 1	(2) 617	-
Clinch Valley # 2	- Group 2, 4, 6B	(2) 524	-
Tiller	- Group 2, 5, 6B	(2) 524	-
Pocahontas	- Group 3	(2) 617	-
Upper Buchanan	- Group 3	(2) 617	-
Tug River	- Group 3	(2) 617	-
Clinch Valley # 1	- Group 3	(2) 617	-
Thacker	- Group 5	(2) 629	-
Kenova	- Group 6	(2) 629	-
ICG RR.			
Alabama	- Group 1, 2	-	-

TABLE 38 (cont.)

Origin Group Name and No.		C	D
StL-SF Rwy.			
Alabama	- Group 1	-	-
		-	-
		-	-
Alabama	- Group 2	-	-
Alabama	- Group 3	-	-
L&N RR.			
Wind Rock	- Group 1	(1)(5) 473	-
La Follette	- Group 2	(1)(5) 483	-
Jellico-Middlesboro	- Group 3	(1)(5) 500	-
Harlan	- Group 4	(1)(5) 514	-
Hazard	- Group 5	(1)(5) 581	-
Elkhorn	- Group 6	(1)(5) 581	-
Sparta	- Group 11	-	-
Palmer	- Group 12	-	-
Whitwell	- Group 13	-	-
Whiteside	- Group 14	-	-
Alabama	- Group 1	-	-
Western Ky.	- Group 3	-	-
SRS			
Lake City	- Group 27	-	-
Pioneer	- Group 28	-	-
Jellico	- Group 29	-	-
Middlesboro	- Group 30	-	
Glen Mary	- Group 34	-	-
Crab Orchard	- Group 35	-	
Rathburn	- Group 36	-	-
Pine Knot	- Group 37	-	-
H&NE	- Group 38	-	
Dayton	- Group 39	-	-
Somerset	- Group 40	-	-
S. W. Va.	- Group 6, 6A	-	-
Alabama	- Group 1, 2, 2A, 3	-	-
Alabama	- Group 4, 4A, 5	-	-

TABLE 38 (cont.)

TO
BIRMINGHAM, ALA.

EXPLANATION OF REFERENCE MARKS:

NOTE 1 - Includes rates from origins on Kanawha Central Rwy. and Winifrede RR.

NOTE 2 - Includes rates from origins on PCW (NF&G - Group 1).

(1) Applicable only on coal for coking or metallurgical purposes.

(2) Applicable only on coal for coking or metallurgical purposes, 1,500 tons from one origin or 5,000 tons from more than one origin, concentrated at designated points of concentration.

(3) Applicable only from Adamsville, Ala., and for coking and reshipping.

(4) Applicable only from Bergens, DeBardeleben, Dora, Drummond, Lorton, Palos and Sumiton, Ala., and for coking and reshipping.

(5) Applicable only on shipments of not less than 1,500 tons.

(6) Applicable only from Chetopa, Ala., and for coking and reshipping.

(7) Applicable only from Black Diamond, Chetopa, Clinn, Ensley, Johns and Kimberly, Ala.

(8) Applicable only from Blocton and Divide, Ala.

(9) Min. wt. 140,000 lbs. per car.

(10) Applicable only from Argo, Gessemer, Brookside, E. Birmingham, Ensley, Littleton, N. Birmingham, Republic, Thomas and Woodward, Ala.

(11) Applicable only from Blocton, Ala.

TO
KINGSPORT, TENN.

Origin Group Name and No.		C	D
C&O Rwy.			
Big Sandy	- Group 5	238	-
C&O RR.			
S. W. Va.	- Group 1	149	-
N&W Rwy.			-
Virginian	- Group 1	-	-
Clinch Valley #2	- Group 2	191	-
Tiller	- Group 2	191	-
Pocahontas	- Group 3	-	-
Upper Buchanan	- Group 3	-	-
Tug River	- Group 3	-	-
Clinch Valley #1	- Group 3	-	-
Thacker	- Group 5	-	-
Kenova	- Group 6	-	-
L&N RR.			
La Follette	- Group 2	271	-

TABLE 38 (cont.)

Origin Group Name and No.		C	D
L&N RR. (Cont'd.)			
Jellico-Middlesboro	- Group 3	260	-
Harlan	- Group 4	230	-
S. W. Va.	- Group 4	-	-
SRS			
S. W. Va.	- Group 3, 6C	-	-
S. W. Va.	- Group 6, 6A	(1)(5) 156	-
		(2)(5) 149	
		(3)(5) 165	
		(4)(5) 157	

EXPLANATION OF REFERENCE MARKS:

(d) - Subject to special detention rules.
(1) - Minimum weight 150,000 pounds.
(2) - Minimum weight 200,000 pounds.
(3) - Minimum weight 100,000 pounds.
(4) - Minimum weight 140,000 pounds.
(5) - Annual volume 300,000 tons.

23. *Rate Structure from the Appalachian Region to Tidewater*

The shipment of coal to Tidewater refers to the transportation of coal, mined in the Appalachian Region, to the Atlantic Ports for further transshipment by water. Subsequent shipment may terminate locally, domestically but outside the port locale, or at a foreign destination. Since domestic Tidewater rates are proportional rates, the rate level will depend, in part, upon the final destination.

In 1971 bituminous coal dumpings at Atlantic Ports totaled 46,474,654 tons. Over 75 percent of that amount was terminated by the Norfolk & Western and the Chesapeake & Ohio Railroads. Slightly over 37 million tons were destined for export, over 4 million tons had a local marine termination, and over 5 million tons had other domestic terminations. Table 39 summarizes the Tidewater traffic by carrier, port, and marine destination for the year 1971.

TABLE 39

*Bituminous Coal Dumpings at Atlantic Ports**

(Net Tons)

Railroad & Port	New England	Foreign[a]	Other	Inside Capes	Total
		1971			
Penn Central:					
New York	189,316	-	29,476	-	218,792
Philadelphia	-	38,541	-	384,804	387,345
Baltimore	-	74,155	-	1,555,867	1,630,022
Total	189,316	112,696	29,476	1,904,671	2,236,159
Baltimore & Ohio:					
Baltimore	-	2,937,540	-	1,370,951	4,308,491
Reading Company:					
New York	713,206	-	637,778	-	1,350,984
Philadelphia	-	9,371	-	753,017	762,388
Total	713,206	9,371	637,778	753,017	2,113,372
Central of New Jersey:					
New York	132,833	-	83,728	-	216,561
Western Maryland:					
Baltimore	-	364,313	-	21,042	388,355
Chesapeake & Ohio:					
Hampton Roads	-	8,487,819	2,990,310	15,063	11,493,192
Norfolk & Western:					
Hampton Roads	-	25,309,693	411,831	-	25,721,524
Grand Total	1,035,355	37,221,432	4,153,123	4,064,744	46,474,654

*- Excludes bunker fuel.

a- Includes shipments to U.S. Military Forces; excludes shipments to Canada.

The Hampton Roads ports of the N&W at Lamberts Point, Va., and the C&O at Newport News, Va., handled 34,534,416 tons of coal in 1973. The breakdown between ports and export-domestic tonnage was as follows:

Lamberts Point (tons)			Newport News		
Export	All Other	Total	Export	All Other	Total
23,872,617	1,438,645	25,311,262	6,187,426	3,031,198	9,223,154

N&W base rate group origins for tidewater coal are comprised of the Pocahontas, Tug River, Clinch Valley No. 1, Clinch Valley No. 2, Upper

Buchanan, and Virginian Districts. Thacker, Kenova, and Tiller Districts form a group taking rates differentially higher than the base group. The Greenbrier, New River, and Winding Gulf Fields, collectively known as the New River Group, make up the C&O base rate group origins. Coal from other fields takes rates differentially higher than coal from the New River Group. Table 40 shows the origin of coal terminated by the N&W and the C&O at Hampton Roads, including traffic received from connecting carriers, for the year 1972.

TABLE 40
(tons)

	Lamberts Point
N&W - Pocahontas Dist.	4,744,541
- Virginian Dist.	6,627,447
- Tug River Dist.	917,582
- Upper Buchanan Dist.	3,896,841
- Clinch Valley No. 1 Dist.	243,466
- Clinch Valley No. 2 Dist.	299,094
- Thacker-Tiller Dists.	7,038,727
- Kenova Dist.	450,290
Clinchfield Railroad	467,633
Penn Central Co.	256,825
Norfolk, Va.	6,919
Louisville and Nashville RR.	303,813
Southern Ry.	296,008
Reading Co.	4,855
Total	25,554.041

	Newport News
C&O - New River Field	2,745,862
- Kanawha Field	3,461.481
- Kentucky Field	2,286,410
Penn Central Co.	710.259
Winifrede RR.	32,914
Southern Ry.	100,521
Total	9,337,447

Tables 41 and 42 are statements of the rates on coal to Lamberts Point, Va. and Newport News, Va., respectively, for transshipment from all origin carriers and coal districts from which through transshipping rates are published. All rates are on a single-car basis without any qualifications for multiple-car, annual-volume, or trainload movement. The tables contain four categories of transshipping rates–(1) when for export movement; (2) when for coastwise movement to outside harbor destinations; (3) when for coastwise movement to inside harbor destinations; and (4) the "Coking Refund" rates.

The export rates are self-explanatory, and as will be noted from Table 39 the preponderance of the traffic moves on these rates. The majority of the export traffic consists of coal for metallurgical or coking purposes. Japan is the leading receiver of coal moving through Hampton Roads ports. The tonnage dumped over these ports in 1972 for export moved to the following destination groups:

	Lamberts Pt.	Newport News	Total
Europe	10,968,069	4,278,356	15,246,425
Asia	12,141,600	1,783,554	13,925,154
South America	1,795,340	592,563	2,387,903
Other	28,376	1,371	29,747
	24,933,385	6,655,844	31,589,229

As to the distinction in the coastwise rates between inside and outside the harbor, the rates for inside the harbor cover only coal transshipped for deliveries on Chesapeake Bay south of a line drawn from the mouth of Back River to Cape Henry, Va., including Hampton Roads, James and Elizabeth Rivers and tributaries thereof. This description of the harbor limits effectively narrows the territory to which the inside harbor rates apply, and there is very little movement on the inside harbor rates. As a matter of fact, in 1972 less than 5,000 tons of coal moved on such rates, the remainder of the coastwise tonnage moving on the outside harbor rates. At one time the inside harbor rates applied for movement inside the Virginia capes, which would have included movement to destinations on Chesapeake Bay into the Baltimore, Md., area. However, the present application of the inside harbor rates was made effective September 26, 1953.

TABLE 41

Rates on Coal to Lamberts Point, Va. for Transhipment

(Rates in cents per ton of 2,000 pounds and include Ex Parte No. 295)

From Coal Districts	Export	Coastwise				Coking Refund
		Outside Harbor		Inside Harbor		
		A	B	A	B	
N&W - Pocahontas - Fug River - Upper Buchanan - Clinch Valley No. 1 - Virginian	579	570	563	639	639	504
N&W - Clinch Valley No. 2 - Thacker - Kenova - Tiller	592	582	575	653	653	515
CC&O - S.W. Va.	592	582	575	--	--	--
KC&NW - Kanawha	592	582	575	653	653	515
L&N - S.W. Va.	656	--	--	--	--	--
- Wincrock	682	--	--	--	--	--
- Harlan	656	--	--	--	--	--
- Hazard-Elkhorn	741	--		--	--	--
C&O - NF&G	579	570	563	639	639	504
- Kanawha	592	582	575	653	653	515
Sou - IRR	592	599	599	646	646	515
- (1)S.W. Va.	592	599	599	--	--	--
- (2)S.W. Va.	656	--	--	--	--	--
- Jellico-Middlesboro	667	--	--	--	--	--
- Lake City	682	--	--	--	--	--

Explanation of Reference Marks:

A - Applicable on coal for other than metallurgical or coking purposes.
B - Applicable on coal for metallurgical or coking purposes.
(1) - Applicable from Calvin, Imboden and St. Charles, Va., and intermediate stations.
(2) - Applicable from origins in Virginia other than (1).

TABLE 42

Rates on Coal to Newport News, Va., for Transshipment

(Rates in cents per ton of 2,000 pounds and include Ex Parte No. 295)

		Coastwise				
		Outside Harbor		Inside Harbor		
From Coal Districts	Export	A	B	A	B	Coking Refund
CO - New River	579	570	563	639	639	504
- Kanawha	592	582	575	653	653	515
- Big Sandy	605	582	575	678	678	515
KC - Kanawha	592	582	575	653	653	515
KCNW - Kanawha	592	582	575	653	653	515
PC - Kanawha	592	582	575	653	653	515
SOU - IRR	592	--	--	--	--	--
WNFR - Kanawha	592	582	575	653	653	515

EXPLANATION OF REFERENCE MARKS:

A - Applicable on coal for other than metallurgical or coking purposes.
B - Applicable on coal for metallurgical or coking purposes.

Rates in the tables under the heading "Coking Refund" apply on coal which is transshipped to docks at Seaboard, N.J., or Philadelphia, Pa. A coking plant is in operation at Philadelphia, Pa. The coking plant at Seaboard, N.J., is no longer in operation When the coal is transshipped at Hampton Roads ports, the outside harbor coastwise rates are assessed. Upon evidence in the form of a certificate that, upon arrival at Philadelphia, the coal was manufactured into coke and the coke shipped by rail or water beyond the corporate confines of the coking plant at the ratio of one and one-half tons of coal for each ton of coke shipped, a refund of 59 or 60 cents net ton, depending upon origin group from which the coal moved, is made by carrier to receiver. Thus, the coking refund rates shown in the table are 59 or 60 cents net ton less than the outside harbor coastwise rates indicated in the table. The coking refund rates were voluntarily established in 1959 in an effort on the part of the carriers to assist the coastal coking plants in continuing to operate during a period of dire economic conditions. The involved carriers have filed a proposal to cancel the 59-60 cent refund rates.

The fact that there are two lines of rates under the inside harbor and outside harbor columns – one applying on coal for metallurgical or coking purposes, and the other column applying on coal for other than metallurgical or coking purposes, is due to decision of the Commission in Ex Parte No. 256 holding coastwise rates over $1.00 per ton to an increase of 10 cents per ton on coal for metallurgical or coking purposes and 15 cents per ton on other coal.

As Table 39 indicates, the PC, B&O, Reading, CNJ, and WM transported 9,264,939 tons of coal to ports of New York, Philadelphia, and Baltimore. This represents less than 25 percent of the tidewater dumpings. Tidewater rates to the transshipment piers of the North Atlantic ports are also made on an origin group basis. The Clearfield, Cumberland-Piedmont-Somerset, and Reynoldsville Districts are the base districts for tidewater shipments. The higher differential rate districts located west of the base districts are Greenburg, Westmoreland, West Virginia, and Gauley Districts. The approximate current rate group differentials are as follows:

District (per net ton)	Differential over base
Greenburg	10¢-14¢
Westmoreland	28¢-33¢
West Virginia	28¢-33¢
Gauley	45¢-51¢

The lack of uniformity in the present rate differentials is the result of the conversion of the rates from a gross ton to a net ton basis in 1954 and the subsequent application of authorized general rate increases on straight percentages or percentages with holddowns.

Single-car rates move a significant tonnage of coal only to Baltimore for export. Table 43 shows the rates from various origins to the Baltimore piers.

TABLE 43

Origin District	Export Rate*	Miles
Westmoreland (Freeport)	576	335.6
Gauley	576	406
Somerset	541	219.8
Elk River	576	330.8
Clearfield	584[1]	300
Clearfield	584[1]	317

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*Rates are stated in cents per net ton.

[1] Rates include a 35-cent per net ton increase not applicable to rate districts normally differentially higher. In this case, the differential was not maintained.

Rates are published from many origins in the Southern Appalachian Region to Tampa, Fla. for bunker fuel, export, and domestic coastwise movement. However, movement under these rates is practically nonexistent. Table 44 shows the tidewater rates to Tampa.

TABLE 44

*Tidewater Rates**

TO
TAMPA, FLA.

Origin Group Name and No.		Lump Coal	Fine Coal
CC&O Rwy.			
S.W. Va.	- Group 1	(1) 802	
		(2) 835	
		(3) 786	
N&W Rwy.			
Clinch Valley # 2	- Group 2, 6B		
		(1) 847	
		(2) 866	
		(3) 829	
Tiller	- Group 2, 6B		
		(1) 847	
		(2) 866	
		(3) 829	
ICG RR.			
Alabama	- Group 1, 2	(1) 750	(1) 750
		(2) 743	(2) 743
		(3) 727	(3) 727
StL-SF Rwy.			
Alabama	- Group 1		
		(1) 750	(1) 750
		(3) 743	(3) 743
		(2) 727	(2) 727
Alabama	- Group 2		
		(1) 763	(1) 763
		(3) 754	(3) 754
		(2) 739	(2) 739
Alabama	- Group 3		
		(1)(3)(4) 769	(1)(3)(4) 769
		(2) (4) 752	(2) (4) 752

*Rates stated in cents per net ton.

TABLE 44 (cont.)

Origin Group Name and No.		Lump Coal	Fine Coal
L&N RR.			
Whiteside	- Group 62		
		(1) 775	
		(2) 752	
		(3) 759	
Whitwell	- Group 63	(1) 775	
		(2) 752	
		(3) 759	
Palmer	- Group 64		
		(1) 775	
		(2) 752	
		(3) 759	
Sparta	- Group 65)	(1) 775	
Wind Rock	- Group 65)	(2) 752	
Monterey	- Group 65)	(3) 759	
La Follette	- Group 66		
		(1) 783	
		(2) 759	
		(3) 777	
Jellico-Middlesboro	- Group 67		
		(1) 788	
		(2) 765	
		(3) 771	
Harlan	- Group 69		
		(1) 802	
		(2) 779	
		(3) 786	
Alabama	- Group 1		
		(1) 750	
		(3) 743	
		(2) 727	
S.W. Va.	- Group 4		
		(1) 802	
		(2) 835	
		(3) 786	

TABLE 44 (cont.)

Origin Group Name and No.		Lump Coal	Fine Coal
SCL RR.			
Birmingham, Ala.)	(		
Woodward, Ala.)	(	(1)(3) 750	(1)(3) 750
Jacksonville, Fla.)	(	(2) 786	(2) 786
		506	506
SRS			
Lake City	- Group 65)		
Glen Mary	- Group 65)	(1) 775	(1) 775
Crab Orchard	- Group 65)	(2) 752	(2) 752
H&NE	- Group 65)	(3) 759	(3) 759
Pioneer	- Group 66		
		(1) 783	(1) 783
		(2) 759	(2) 759
		(3) 777	(3) 777
Jellico	- Group 67)		
Middlesboro	- Group 67)	(1) 788	(1) 788
Pine Knot	- Group 67)	(2) 765	(2) 765
	)	(3) 771	(3) 771
S.W. Va.	– Group 3, 6, 6A, 6C		
		(1) 802	
		(2) 835	
		(3) 786	
Alabama	- Group 1, 2, 2A, 3		
		(1) 750	(1) 750
		(3) 743	(3) 743
		(2) 727	(2) 727
Alabama	– Group 4, 4A		
		(1) 763	(1) 763
		(3) 754	(3) 754
		(2) 739	(2) 739
Alabama	- Group 5		
		(1) 769	(1) 769
		(3) 762	(3) 762
		(2) 747	(2) 747

TABLE 44 (cont.)

EXPLANATION OF REFERENCE MARKS:

(1) - Bunker coal
(2) - Export coal
(3) - Domestic coastwise coal
(4) - Not applicable from Brilliant, Ala.
(5) - Applicable only from Groups 3, 6A.

Interfuel competition has forced the publication of reduced multiple-car and trainload rates to the northern Atlantic tidewater ports for coastwise shipment. Rate reductions are linked to a reduction in free time, and the size of the reduction depends upon the minimum shipment size and the number of origins per train from which tonnage can originate. In 1963 when the first trainload rates were published, rate reductions were as follows:

Train Size	Number of Origins Per Train from which Tonnage Could Originate	Reduction under Single Car Rate Per Net Ton
7,000 tons	From not more than 2 origins	$1.50
7,000 tons	From 3 or more origins	1.25
4,500 tons	From 1 or more origins	.85

Table 45 shows multiple-car and trainload rates from various origin districts to tidewater ports for coastwise movement.

TABLE 45

Origin District	Destination	Minimum Consignment (tons)	Loading Time (days)	Unloading Time (days)	Rate (cents per ton)	Amount under normal Rate
Gauley	Port Reading, N.J. (Harbor Delivery)	7,000	2	1	516	172
Gauley	Philadelphia (Inside Capes)	7,000	2	1	489	174
Clearfield	Philadelphia (Inside Capes)	7,000	1	1	435	175
Clearfield	Baltimore (destined Sparrows Pt.)	1,500	2	1	539	38-Metallurgical 71-Steam

Finally, there is no prescribed relationship between the rates maintained from the southern fields to Hampton Roads ports and those maintained from the northern fields to Baltimore, Philadelphia, or New York Piers.

24. *Rate Structure on Coal from Origins West of the Mississippi River*

An estimated 504,653 million tons of bituminous coal reserves are located west of the Mississippi River. That amounts to approximately 44 percent of the bituminous coal reserves within the United States. Yet in 1973 the estimated total bituminous production west of the Mississippi totaled only 64,941,000 tons or 10.8 percent of the total U.S. production that year. Table 46 summarizes the production figures for western bituminous coal. As Table 46 indicates, western coal production had increased in 1972 to 54,231,000 tons, or approximately 37 percent over 1970 production of 39,713,000 tons. The 1973 tonnage is estimated to be a 20-percent increase over 1972 tonnage in the west to 69,941,000 tons. Approximately two-thirds of this tonnage originated in Wyoming, Montana, New Mexico, North Dakota and Colorado. This is even more significant as total U.S. production actually declined by 2 percent from 1970 to 1972, while 1973 estimated U.S. production increased approximately 10 percent over 1972 production. Most of this production originated at 65 mines with 100,000 tons or more production in the West. This is particularly significant when we consider that in Kentucky alone there are in excess of 300 coal mines with such production.

Production and distribution of western coal are expected to increase dramatically by 1980. For example in 1973, approximately 13,600,000 tons of Wyoming coal was consumed. By 1980, the usage of Wyoming coal is expected to jump to 69,100,000 tons.

TABLE 46

Western Bituminous Coal Production (Excluding Alaska)

(Thousands of Tons)

Rocky Mountain - Upper Missouri River and West Coast Regions	1970	1971	1972	Est. 1973
Arizona	132	1,146	2,900	3,000
Colorado	6,025	5,337	5,542	6,254
Montana	3,447	7,064	8,045	10,442
New Mexico	7,361	8,175	8,249	9,000
Utah	4,733	4,626	4,800	5,000
Washington	37	1,134	2,635	3,200
Wyoming	7,222	8,052	10,920	14,100
	28,957	35,534	43,091	50,996

TABLE 46 (cont.)

Western Bituminous Coal Production (Excluding Alaska)

(Thousands of Tons)

Rocky Mountain - Upper Missouri River and West Coast Regions	1970	1971	1972	Est. 1973
Great Plains - Southwestern Regions				
Arkansas	268	276	330	458
Iowa	987	989	1,500	1,500
Kansas	1,627	1,151	1,227	1,112
Missouri	4,447	4,036	4,553	4,650
Oklahoma	2,427	2,234	2,530	2,225
Texas (est.)	1,000	1,000	1,000	4,000
	10,756	9,686	11,140	13,945
Total West of Mississippi	39,713	45,220	54,231	64,941
Total U.S. Production	602,932	552,192	590,000	596,468

The western mines are very diverse geographically and generally the coal, in order to reach its markets, must be hauled via rail greater distances than in the east or south. For example, Burlington Northern's average haul per ton for 1973 was in excess of 525 miles. Its longest trainload haul was 1,430 miles. Average haul per ton in 1969 was 225 miles for all railroads in the United States. Fuel shortages and pollution controls have caused various power companies to obtain western coal which moves by rail for distances of up to 1,400 miles one way. These long-haul tonnages can at present be most economically moved in unit-train or trainload service. The western rail carriers have established rates for such service and are moving large tonnages of coal to distant markets. The unit-train concept has provided a means to effectively market western coal which, by 1980, could very well reach 150,000,000 tons per year or more. Presently unit-train or trainload rail service moves the preponderence of western coal tonnage to electric generating stations. Most of the projected expansion of coal production in the West, other than coal for mine-mouth electric generating stations or gasification or liquefaction plants will also move in unit-train service.

Definite marketing territories for western coal are difficult to define because of varying influences in the present continuously changing market. Generally, western coal moves or will move into the territory east of the Mississippi because of its low sulfur content rather than a lower delivered price than for midwestern coal. This marketing boundary appears, however, to be expanding.

Recent announcements indicate that several new Mississippi and Ohio River dock and transfer facilities for rail to water movements will be constructed. These facilities will generally lower the delivered price of western coal into territory east of the Mississippi River with rail to water movement into that territory.

The markets for western coal have developed rapidly in recent years because of three basic characteristics:

1. Large reserves
2. Relatively low mining costs – both present and future
3. Low sulfur content

New energy conversion plants, including those for steam electric generation, as well as gasification or liquefaction, require tremendous reserve fuel commitments in order to justify construction. In the past, power plants have usually bought coal on short-term contracts or on the spot market. This could be done in a period of abundant energy supplies, but with the present and future scarcity of fuel, a guaranteed energy supply is required just to get financing on a new plant. It is not unusual for several hundred million tons of coal reserves to be committed to a major energy plant.

The primary markets for western coal are power generation by electric utilities and conversion to gas or oil. Conservative projections of coal usage by electric utilities show a growth from the present 330 million tons per year to 600 million tons per year by 1985. Much of this growth in production will come from the West.

A particularly fast growing area of the United States where very little coal is in use today is the South-Central region. This area has been almost entirely dependent on gas and oil for power generation. Future supplies of both may be uncertain and expensive.

Most western coal mined for utility use will move to new power plants designed to burn it efficiently. Some coal is currently moving to existing plants that have been modified to permit its use and some western coal is being and will continue to be blended with eastern and mid-western coal to meet air pollution regulations.

The one-percent waybill sample shows that significant tonnages of bituminous coal moved interstate from the following western origin states to the following destinations:

Origin State		Destination State
Colorado	-	Utah
Idaho	-	Illinois
Montana	-	Illinois
		Minnesota
Utah	-	Idaho
		Nevada
		Washington

Origin State		Destination State
Wyoming	-	Kansas
	-	Illinois
	-	Iowa
	-	Missouri
	-	Nebraska
	-	South Dakota

Not all western mine origins fall into origin rate groups. The 1972 one-percent waybill sample shows significant interstate movements from the following mines and shipping origins which have been grouped to the following state destinations:

Origin Rate Group		Destination State
Bowie - Somerset, Colo.	-	Utah
Carbondale - New Castle, Colo.	-	Utah
	-	California
Castle Gate, Utah	-	Washington
	-	Nevada
	-	California
Group 4, N. M.	-	Arizona
Hanna, Wyo.	-	Iowa
	-	Nebraska
	-	Missouri
	-	Colorado
Moberly, Mo.	-	Nebraska
Pittsburg, Kan., Missouri	-	Nebraska
	-	Missouri
Tulsa, Okla.	-	Nebraska
	-	Missouri

Unit-train or trainload coal traffic in the West for the most part originates at a single mine and terminates at a single location. Most of the recently opened mines and those proposed for the future have the capability of loading a 10,000-ton train in 4 hours or less. New electric generating stations which will consume the new production in the West will have the capability to unload in about 4 hours. The unit train's attractiveness to the shipper is cost savings. The exact impact of these cost savings will depend upon the specific elements of the unit-train system in each individual situation.

There is no basis or rate scale for arriving at unit-train rates. The rates are tailored for each individual movement. The unit-train rate levels are less than would apply for single-car moves due to cost savings by the carriers.

Table 47 contains representative single-car rates on coal from various western coal producing points to western destinations. Included in Table 47 are rates on rail-lake-rail eastern coal which moves via boat to docks at Duluth, Minn., and Superior, Wisc., generally put into storage at the docks and subsequently reshipped via rail to destinations in Minnesota, Wisconsin, North and South Dakota, and Iowa. There are some movements to Canadian destinations.

These single-car rates have been in effect for many years but are virtually meaningless in today's coal market. The single-car rates move a relatively small proportion of the western coal today and will become relatively less important in the future. Most new western coal mines are not designed to load single-car shipments, but are trainload or unit train oriented. Many western coal producers do not sell in the single-car market. Generally different single-car rate structures exist for coal originating in New Mexico; Arkansas-Oklahoma-Kansas; Utah-Colorado-Wyoming; Montana; Duluth-Superior; and on lignite from North Dakota. Generally, these single-car rates provide that carriers will weigh cars, and provide for normal coal demurrage free time at origin and destination of 48 hours.

TABLE 47

Representative Rail Rates on Bituminous Fine Coal Single-Car Movements

Line No.	Origin	Destination	Rate in Cents NT in effect Sept. 1, 1973	Minimum Weight (Open Top Cars)	Estimate of Tonnage 1972
1.	York Canyon, N.M.	Eagle Pass, Tx.	1033	#140,000	200000
2.	Gallup, N.M.	Joseph City, Ariz.	273	°170,000	400000
1.	Superior, Wi.	St. Paul, Mn.	309	LFVC*	200212
2.	Duluth, Mn.	Grand Forks, N.D.	408	LFVC*	326
3.	Colstrip, Mt.	Brookings, S.D.	920	LFVC*	1301
4.	Colstrip, Mt.	Willmar, Mn.	626	LFVC*	20768
5.	Colstrip, Mt.	Rochester, Mn.	1051	LFVC*	1000
6.	Colstrip, Mt.	Hibbing, Mn.	859	LFVC*	99144
7.	Wyodak, Wy.	Rapid City, S.D.	389	LFVC*	86213
8.	Kleenburn, Wy.	Spokane, Wash.	786	LFVC*	1157
9.	Kleenburn, Wy.	Aberdeen, S.D.	917	LFVC*	138848
10.	Kleenburn, Wy.	Greeley, Colo.	623	LFVC*	16180
11.	Kleenburn, Wy.	Great Falls, Mt.	665	LFVC*	344
1.	Oliver, Colo.	Minnequa, Colo.	460	LFVC*	190000
1.	Elkol, Wy.	Devils Slide, Ut.	300	LFVC*	15594
2.	Rock Springs, Wy.	Soda Springs, Ida.	482	LFVC*	22780
3.	Hanna, Wy.	Longmont, Colo.	366	LFVC*	43750
4.	Hanna, Wy.	Denver, Colo.	349	LFVC*	125889

Explanation of Reference Marks and Notes

* Marked capacity of car, except when car is loaded to full visible capacity actual weight will apply.

# 95 percent of marked capacity of car used but not less than 140,000 pounds.

° Marked capacity of car, except when car is loaded to full visible capacity actual weight will apply, but no less than 170,000 lbs.

Table 48 is similar to Table 47 and contains representative rates that apply to multiple-car movements of coal. The multiple-car rates shown are those for which no annual-tonnage requirements are named. There is no consistent pattern to present multiple-car rates as most of them have been established to meet a specific competitive condition, generally oil or gas competition. Many of the rates are limited as to loading and unloading times, weighing of cars and size of cars used. Because of their tonnage requirements, their applications have been limited to those receivers capable of receiving such tonnages under the limitations named in the rate item. The amounts these rates reflect under the single-car rates vary, with no specific relationship for the most part.

TABLE 48

Representative Rail Rates on Bituminous Fine Coal Multiple-Car Movements

Line No.	Origin	Destination	Rate in Cents NT in effect Sept. 1, 1973	Minimum Tender Net Tons	Rate Reduction under Single-Car Rate, in cents Net ton	Estimate of Tonnage 1972
1.	Kleenburn, Wy.	Lawrence Siding, S.D.	827	1000	No Single-Car Rate	38,000
2.	Kleenburn, Wy.	Cedar Falls, Ia.	1010	1000	54	None
3.	Belle Ayr, Wy.	Council Bluffs, Ia.	561	5000	No Single-Car Rate	"
4.	Belle Ayr, Wy.	Sergeant Bluff, Ia.	513	90 Cars	"	"
5.	Belle Ayr, Wy.	Denver, Colo.	439	50 Cars	58	"
6.	Belle Ayr, Wy.	East St. Louis, Ill.	810	5000	No Single-Car Rate	"
			750	10,000		
7.	Belle Ayr, Wy.	Breed Switch, Ind.	1050	5,000	"	"
			950	10,000	"	"
8.	Belle Ayr, Wy.	Kansas City, Mo.	613 See Note 1	95 Cars	"	"
9.	Decker, Mt.	Allouez, Wis.	795	100 Cars	"	"
10.	Decker, Mt.	St. Paul, Mn.	664	6,600	"	"
11.	Decker, Mt.	E. St. Louis, Ill.	884	5,000	"	"
			819	10,000	"	"
12.	Colstrip, Mt.	Granite Falls, Mn.	777	1.400	"	"

TABLE 48 (cont.)

Representative Rail Rates on Bituminous Fine Coal Multiple-Car Movements

Line No.	Origin	Destination	Rate in Cents NT in effect Sept. 1, 1973	Minimum Tender Net Tons	Rate Reduction under Single-Car Rate, in cents Net Ton	Estimate of Tonnage 1972
1.	Bear Mine, Colo.	Cameo, Colo.	213	5 Cars	15	85,000
2.	Group 10, Oak Hills, Colo.	Kansas City, Mo.	799	1,500	229	None
1.	Hanna, Wy.	Florence, Neb	579	1,500	110	250,000

NOTE:
1. Lake vessel on board rates.

Table 49 contains the annual-volume rates for trainload and unit-train service. These rates include movements for account of the AT&SF, BN, CNW, D&RGW, SLSF and UP, which are the major coal hauling railroads in the West. It is these rates and similar rates which move the predominant tonnage in the West. There are no formulae used which relate these rates to either those shown in Table 47 or Table 48. The rates are patterned to the specific service considerations of the receiver and shipper. Some are based on 24 hours loading and unloading; some on much less time because of more efficient loading and unloading facilities. Others are published for use of carrier-furnished coal cars and some for receiver-furnished cars. Some are predicated on long term continuous operation of the rail service, while others are on a year to year basis. Usually only one shipper and one receiver are able to use a particular rate because that rate has been designed for the service considerations necessary to move the needed tonnage.

In some instances, both shipper and receiver, as well as the carrier, have made long term capital commitments, predicated on the rates shown in Table 49, for movement of coal for periods up to 20 years or more. Coal mines have been opened, rail cars, power and other equipment purchased and electric generating plants built to receive the coal. While rail rate tariffs do not generally commit receiver to such tonnages for more than 12 months at one time, coal contracts between the mining company and the power company generally assure that such tonnages will move for extended periods.

TABLE 49

REPRESENTATIVE ANNUAL-VOLUME RAIL RATES ON BITUMINOUS FINE COAL TRAINLOAD MOVEMENTS

			Trainload Weights (tons, except as noted)				Rate	Annual Tonnage (Aggregate)	
Origin	Destination	Rates in Cents NT in effect Sept. 1, 1973	Minimum	Maximum	Car Ownership	Average Tons Per Car	Reduction Under Single Car Rate In Cents NT	Tariff Requirement	Actual Calendar Year 1972
York Canyon, N.M.	Kaiser, Calif.	766	84 Cars	None	Carrier	100	No Single-	500,000	600,000
		666	84 Cars	None	Carrier	100	Car	700,000	600,000
		566	84 Cars	None	Carrier	100	Rates Excess of 700,000		"
Colstrip, Mt.	Northtown, Mn.	473	6,600	None	Carrier	100	153	700,000	996,441
Colstrip, Mt.	Havana, Ill.	891	10,000	None	Carrier	100	No Single- Car Rate	900,000 from one or more origins to one or more destinations	2,324,031 BN
Kleenburn, Wy.	Havana, Ill.	854	10,000	None	Carrier	92	"		
Colstrip, Mt.	Cohasset, Mn.	369	#102 Cars	105 Cars	Carrier	98	"	1,000,000	Note-1
		345	"	"	Carrier	98	"	1,500,000	1,547,462
		323	"	"	Carrier	98	"	1,750,000	
Colstrip, Mt.	St. Paul, Mn.	500	6,600	None	Carrier	100	126	400,000	Note-2 193,981
Decker, Mt.	Havana, Ill.	862	97 Cars	105 Cars	Carrier	101	No Single- Car Rate	Note-3 3,300,000	Note-4 771,715
Decker, Mt.	+Minneapolis, Mn.	+600	5,300	None	Carrier	100	"	200,000	None
Decker, Mt.	Northtown, Mn.	580	5,300	None	Carrier	100	"	200,000	None
Decker, Mt.	St. Paul, Mn.	609	5,300	None	Carrier	100	"	200,000	None
Kleenburn, Wy.	+Minneapolis, Mn.	+600	5,300	None	Carrier	100	464	200,000	None

Kleenburn, Wy.	Northtown, Mn.	580	5,300	None	Carrier	100	484	200,000	None
Kleenburn, Wy.	St. Paul, Mn.	609	5,300	None	Carrier	100	455	200,000	None
Belle Ayr, Wy.	East St. Louis, Ill.	697	97 Cars	105 Cars	Carrier	100	No Single-Car Rate	500,000	None
Belle Ayr, Wy.	Pueblo, Co.	310	105 Cars	120 Cars	Shipper	100		1,600,000	None
Decker, Mt.	Plaines, Ill.	*942	9,500 in		Carrier	100	"	1,000,000	None
		*933	97 Cars	115 Cars	Carrier	100	"	1,500,000	None
		*930			Carrier	100	"	2,000,000	None
Decker, Mt.	@Allouez, Wisc.	"643	97 Cars	105 Cars	Carrier	100	"	Note-5 1,300,000	None
Oak Hills, Co.	Cherokee, Co.	219	30	None	Carrier	98	29	1,400,000	1,600,000
Carbondale, Co.	Kaiser, Calif.	686	6,400	None	Carrier	100	236	Note-6 500,000	500,000
Sunnyside, Ut.	Kaiser, Calif.	546	8,400	None	Carrier	100	245	700,000	750,000
Somerset, Co.	Geneva, Utah	304	3,100	4,500	Carrier	100	131	Note-7 1,300,000	1,600,000
Catale, Okla.	Kansas City, Mo.	151	6,000	7,500	Shipper	87		300,000	1,176,000
Chelsea, Okla.	Kansas City, Mo.	151	6,000	7,500	Shipper	87		300,000	1,176,000
Hanna, Wy.	Florence, Neb.	579	1,500	None	Carrier	87	110	60,000	250,000
Hanna, Wy.	Sergeant Bluff, Ia.	306	9,500	None	Shipper	100	554	1,100,000	1,100,000
Dana, Wy.	Kansas City, Mo.	310	9,000	100 Cars	Shipper	100	550	800,000	800,000
Dana, Wy.	Hammond, Ind.	764	9,000	100 Cars	Carrier	100		450,000	650,000
Hanna, Wy.	Waukegan, Ill.	657	9,000	100 Cars	Carrier	100		1,550,000	1,550,000

TABLE 49 (cont.)

Explanation of Reference Marks

#In the event carrier is unable to furnish for loading at least 102 cars, but furnishes not less than 95 cars, the minimum tender will be the number of cars actually furnished.
+ Applicable only on traffic when for reshipment beyond via barge.
* Rates effective January 20, 1974.
@ On tonnage transloaded at BN docks for movement beyond by lake vessels.
" Rate effective March 18, 1974.

NOTES

1. Used 345 rate which applies on 1,500,000 tons, however the aggregate tonnage shipped in 1972 was 1,547,462 – 47,462 over the 1,500,000 minimum requirement.
2. Apparently movements started in May, 1972.
3. Volume requirement is based on 24 months.
4. Apparently movements started in August, 1972.
5. Volume requirement is based on 24 months.
6. Minimum 200,000 tons from Carbondale, Colorado, balance from Sunnyside, Utah.
7. In combination with clean coal from Columbia, Utah, with transit at Wash, Utah.

Table 50 shows single-car rates and Table 51 shows multiple-car and conditional rates from origin points in Arkansas, Iowa, Missouri, Kansas, Oklahoma, Texas and Washington. None of the parties submitted typical rates from producing points in those states. We have no knowledge of whether any traffic is moving at such rates, and we have included these tables here in order to present a more complete picture of the available rates on coal from origins west of the Mississippi River.

TABLE 50

Single-Car Rates

Origin	Destination	Distance (miles)	Rate (cents) per ton	Per car Minimum Weight (tons)
Clarksville, Ark.	Ponca City, Okla.	301	731	FVC*
Knoxville, Ark.	Memphis, Tenn.	233	658	FVC
London, Ark.	Hattiesburg, Miss.	446	983	FVC
Russellville, Ark.	Tulsa, Okla.	184	675	FVC
Albia, Iowa	Florence, Nebr.	204	619	FVC
Coatsville Spur, Iowa	Columbia, Mo.	141	351	FVC
Coatsville Spur, Iowa	Hannibal, Mo.	131	346	FVC
Coatsville Spur, Iowa	Jefferson City, Mo.	188	621	FVC
Knoxville, Iowa	Kansas City, Mo.	214	471	FVC
Bartlett, Kan.	Chickasha, Okla.	266	968	FVC
Pittsburg, Kan.	Enid, Okla.	227	800	FVC
Moberly, Mo.	Sergeant Bluff, Iowa	361	440	FVC
Rich Hill, Mo.	Duncan, Okla.	357	1018	FVC
Claremore, Okla.	Sibam Springs, Ark.	143	527	FVC
Panama, Okla.	Santa Rita, N.M.	1235	1290	FVC
Stigler, Okla.	Shreveport, La.	279	677	FVC
Wagoner, Okla.	Van Buren, Ark.	78	605	FVC
Bunsen, Tex.	Ajo, Ariz.	498	1151	25
Tobin, Tex.	Ajo, Ariz.	492	1151	25
Galindo, Calif.	Reno, Nev.	215	912	18
Black Diamond, Wash.	Seattle, Wash. for export	30	206	FVC
Black Diamond, Wash.	Seattle, Wash. for coastwise movement	30	202	FVC
Spokane, Wash.	Geneva, Utah	1454	1037	FVC

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*FVC – Full visible capacity.

TABLE 51

Multiple-Car and Conditional Rates

Origin	Destination	Distance	Rate	Per-Car Minimum Wt.	Per-Shipment Minimum Wt.	Annual-Volume Requirement
Ft. Smith, Ark.	Florence, Ark.	499	544	FVC	1400	100,000
Ratcliff, Ark.	Sergeant Bluff, Iowa	638	615	FVC	1400	220,000 (2-year volume)
Arcadia, Kans.	Sergeant Bluff, Iowa	405	472	FVC	1400	220,000 (2-year volume)
Cherokee, Kans.	Hallam, Nebr.	282	394	FVC	1400	100,000
West Mineral, Kans.	Kansas City, Mo.	137	221	70	70	60,000
West Mineral, Kans.	Kansas City, Mo.	137	302	50	50	60,000
Appleton City, Mo.	Council Bluff, Iowa	269	353	FVC	1400	100,000
Bevier, Mo.	Bellevue, Nebr.	287	333	FVC	1400	100,000
Unionville, Mo.*	Columbia, Mo.*	173	543	None	1500	none
Chelsea, Okla.	Mason City, Iowa	519	765	FVC	1400	100,000
Howe, Okla.	Sergeant Bluff, Iowa	603	615	FVC	1400	220,000 (2-year volume)

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*Interstate route via Kansas City, Mo.

25. *Alaska*

The total reserves of Alaskan coal as of January 1, 1970 were estimated at 6,012 million tons. Of this total, 667 million tons is bituminous and 5,345 is subbituminous.

Table 52 shows Alaskan coal production from 1970 through 1973.

TABLE 52

Alaskan Coal Production

Year	(thousands of tons) Production
1970	549
1971	698
1972	710
Est. 1973	775

In 1971, all coal extraction was done by stripmining. Of the 698 thousand tons produced, 627 thousand tons were not sold on the open market. Fifty thousand tons of coal were brought into Alaska in 1971. All movements of Alaskan coal were intrastate.

26. *Revenue Yields and Cost of Service of Typical Rates*

The order of September 28, 1973, instituting the investigation into the railroad freight rate structure on coal stated:

> The freight rate structures on coal, as a whole, yield revenues substantially above the carriers' variable costs of performing the service, and that although cost studies prepared under recognized accounting standards and procedures will be accepted, such evidence may not be essential to a proper disposition of this subnumbered proceeding *at this stage of the proceeding.* [Emphasis supplied]

This stage of the proceeding is investigative and educational in nature, staged in a nonadversary posture and designed to determine what areas of the coal rate structures, if any, require corrective action.

Some of the steel and electric utility interests submitted evidence of cost of service on movements of bituminous coal to their respective plants. These costs are set forth in detail later herein. See Tables 61 and 62, *infra.* In order to supplement the record, the Coordinator directed the Section of Cost and Valuation of the Commission to supply the Coordinator with adjusted regional average costs for typical or representative movements of record. See Tables 53 to 60, inclusive. These adjusted regional average costs will not be used in this proceeding to prescribe any maximum or minimum rates, or to order any rates canceled, reduced, or increased, unless full opportunity has been given the parties to rebut such costs.

The variable and fully allocated costs set forth in Tables 53 through 60 are based on the unit costs shown in *Rail Carload Cost Scales by Territories for the Year 1972*, Statement No. 1C1-72, prepared by the Commission's cost and valuation section. However, the costs in these tables also reflect an updating to a 1973 level based on the methods outlined in *Rail Carload Cost Scales by Territories as of January 1, 1958*, Statement No. 2-58.

Variable costs consist of: 1) the variable portions of freight operating expenses, rents and taxes (excluding Federal income taxes), and 2) the variable portion of the "cost of capital", excluding any allowance for Federal income taxes. Fully allocated costs consist of the variable costs plus an allocation of the constant costs which are composed of: 1) the constant portions of the freight operating expenses, rents and taxes (excluding Federal income taxes), and 2) the constant, or remaining, portion of the "cost of capital".

When developing the fully allocated cost for a given movement, the variable cost (ultimately stated in cents per net ton for a comparison to the rate) is developed first and to this cost there is then added an allocation of the constant costs. For comparison purposes fully allocated costs are shown on three bases, with constant costs being allocated on the ton and ton-mile basis, the car and car-mile basis, and the dollar basis. To develop the constant unit costs per ton and per ton-mile, and the constant unit costs per car and per car-mile, the dollar numerators, separated between those expenses and cost of capital not associated with distance (terminal) and those expenses and cost of capital associated with distance (line-haul), remain the same. However, the divisors change, that is, for the ton and ton-mile basis the tons originated and terminated, and the ton-miles are used for the respective terminal and line-haul elements, and for the car and car-mile basis the loaded cars and the loaded car-miles are used in a similar way. The constant unit costs for each of the two bases are then applied to the respective tons and ton-miles, and cars and car-miles, generated by a particular movement. The allocated constant costs thus obtained for each basis are converted to constant costs per net ton, which are then added to the variable cost per net ton to produce the fully allocated costs per net ton for each basis. For the dollar basis an allocation ratio is developed for each region by dividing the total regional variable and constant costs by that region's total variable costs. The variable cost per net ton for a given movement is then multiplied by the applicable regional ratio to produce the fully allocated cost per net ton.

The variable costs shown in Tables 53 through 60 reflect adjustments to territorial average costs so as to reflect certain transportation characteristics indicated in the exhibits of record, including the actual route of movement miles, and the actual or minimum weights. Furthermore, in lieu of the way train miles and circuity factors indicated in Statement No. 1C1-72, these factors were developed from Statement No. 1S2-72, *Ratio of Empty to Loaded Freight Car Miles by Type of Car and Performance Factors for Way, Through and All Trains Combined, 1972.* For costing purposes open hopper-general service cars were used; and, way and through costs were applied to single and multiple-car movements, and only through costs to trainload movements. In addition the following adjustments were made to the single car, multiple-car and trainload movements.

For single-car movements, line-haul costs were adjusted by removing the interchange costs included in the territorial average costs on a loaded car-mile basis and substituting therefor the interchange cost per car interchanged and using the number of interchanges from the routings shown in exhibits of record. No adjustments were made to the terminal costs.

For multiple-car movements, terminal costs were adjusted: by reducing the switching cost per carload by 50 percent at origin and destination, by reducing variable freight-train car costs per carload by 50 percent at origin and destination, and by reducing station clerical costs per carload by assuming 75 percent of the cost as being associated with the car and 25 percent as being associated with the shipment. Line-haul costs were adjusted by removing the interchange costs included in the territorial average costs on a loaded car-mile basis and substituting therefor the interchange costs per car interchanged and using the number of interchanges from the routings shown in the exhibits of record.

For trainload movements, in carrier-owned equipment, terminal costs were adjusted: by reducing the switching cost per carload by 75 percent at origin and destination, by reducing variable freight-train costs per carload by 50 percent at origin and destination, and by reducing station clerical costs per carload by assuming 75 percent of the cost as being associated with the car and 25 percent as being associated with the shipment. Additional adjustments to the terminal carload costs for trainload movements were made for certain movements shown in Table 58, and identified therein by the following mileages for each movement: 248; 282 (for both the 215-cent and 222-cent rates); 312 (for the 281-cent rate only); 348; 357; 361; 362; 391; 498; 555; 580; and 693 miles. Adjustments to these movements were made by reducing the freight-train car costs at origin and destination on the basis of the record which indicated that less than one-day loading and one-day unloading time was required for these movements. Line-haul costs were adjusted by removing the interchange costs included in the territorial average cost on a loaded car-mile basis and substituting therefor the interchange cost per car interchanged (reduced by 50 percent) and using the number of interchanges from the routings shown in exhibits of record. Further, the territorial average inter- intratrain switching cost per loaded car-mile was eliminated.

For trainload movements in shipper-owned cars, in addition to the adjustments indicated above for carrier-owned equipment (other than those identified movements in Table 58) the entire freight-train car costs, both terminal and line-haul, were eliminated.

As to the rates and earnings shown in Tables 53 through 60 they reflect the Ex Parte No. 295-A rate level.

TABLE 53

Earnings, Rates and Costs for Single-Car Movements with No Annual-Volume Requirements

Distance (Actual Miles)	Territory	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
33***	Illinois, Indiana & Western Ky. to C.F.A.	420.5	4.636	$1.53	$1.09	$1.58	$1.27	$1.43
33***	" " "	544.2	6.000	1.98	1.09	1.58	1.27	1.43
33***	" " "	579.9	6.393	2.11	1.09	1.58	1.27	1.43
33	Illinois, Indiana & Western Ky. to C.F.A.	810.8	8.939	2.95	1.09	1.58	1.27	1.43
41.5***	North Appalachian to C.F.A.	344.0	4.340	1.80	2.16	2.90	2.48	2.74
85	Southern Appalachian to the South East	180.4	2.506	2.13	1.65	2.27	1.97	2.15
99***	Illinois, Indiana & Western Ky. to C.F.A.	182.3	2.010	1.99	1.42	2.08	1.70	1.86
99***	" " "	210.7	2.323	2.30	1.42	2.08	1.70	1.86
99	Illinois, Indiana & Western Ky. to C.F.A.	304.2	3.353	3.32	1.42	2.08	1.70	1.86
97	Southern Appalachian to the South East	219.0	3.000	2.91	1.69	2.34	2.03	2.20
100**	Northern Appalachian to C.F.A.	295.1	4.340	4.34	3.33	4.26	3.81	4.23

**Lake Cargo
***River Traffic

TABLE 53 (cont.)

Distance (Actual Miles)	Territory	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
106	Western Districts to W.T.L.	221.7	2.576	2.73	2.04	3.16	2.42	2.67
122**	Northern Appalchian to C.F.A.	241.9	3.557	4.34	3.49	4.48	4.01	4.42
139	Southern Appalachian to the South East	150.7	2.094	2.91	1.93	2.70	2.35	2.52
148	Western Districts to W.T.L.	145.9	2.088	3.09	2.85	4.09	3.44	3.73
151***	Northern Appalachian to C.F.A.	104.0	1.350	2.04	2.75	3.84	3.28	3.49
156**	" " "	104.1	1.353	2.11	2.78	3.89	3.32	3.53
164	Western Districts to W.T.L.	126.2	1.830	3.00	2.98	4.27	3.61	3.90
165	Northern Appalachian to Trunkline Territory	196.6	2.890	4.77	3.15	4.28	3.77	4.00
171***	Northern Appalachian to C.F.A.	110.8	1.440	2.46	2.88	4.03	3.44	3.65
173**	Northern Appalachian to C.F.A.	155.7	2.260	3.91	3.16	4.32	3.80	4.01
190	Western Districts to Western Territory	170.0	2.540	4.82	3.22	4.58	3.92	4.22
200	Northern Appalachian to Trunk Line Territory	157.8	2.565	5.13	3.68	4.92	4.46	4.67

	Southern Appalachian to the South East	156.2	2.170	4.47	2.28	3.22	2.82	2.98
	Western Districts to W.T.L.	121.3	1.730	3.66	3.84	5.26	4.55	5.04
219.8*	Northern Appalachian to Trunk Line Territory	155.0	2.460	5.41	4.42	5.73	5.23	5.61
227	Western Districts to W.T.L.	137.0	1.570	3.49	2.82	4.28	3.41	3.69
229**	Northern Appalachian to C.F.A.	131.8	1.803	4.13	3.39	4.72	4.10	4.30
230	Southern Appalachian to the South East	186.0	2.548	5.86	3.40	4.74	4.12	4.31
239	Northern Appalachian to Trunk Line Territory	130.9	2.146	5.13	4.69	6.06	5.57	5.95
246***	Illinois, Indiana & Western Ky. to C.F.A.	97.3	1.073	2.64	2.12	3.16	2.60	2.76
246***	" " "	106.9	1.178	2.90	2.12	3.16	2.60	2.76
246	Illinois, Indiana & Western Ky. to C.F.A.	148.6	1.638	4.03	2.12	3.16	2.60	2.76
246	Southern Appalachian to the South East	128.7	1.947	4.75	2.67	3.71	3.33	3.48
254	" " "	100.9	1.350	3.43	2.46	3.53	3.07	3.21
277	" " "	167.6	2.430	6.73	2.75	3.88	3.45	3.59

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* Export

** Lake Cargo

*** River Traffic

TABLE 53 (cont.)

Distance (Actual Miles)	Territory	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
283	Western Districts to W.T.L.	47.7	1.442	4.08	6.87	8.49	8.64	9.00
256	" " "	84 3	1.360	3.89	4.60	6.81	5.51	5.99
287	Illinois, Indiana & Western Ky. to C.F.A.	127.3	1.780	5.11	3.75	4.97	4.61	4.76
287	" " "	132.3	1.850	5.31	3.75	4.97	4.61	4.76
287	Southern Appalachian to the South East	118.7	1.627	4.67	3.77	5.28	4.60	4.78
291	" " "	109.9	1.636	4.76	2.88	4.04	3.62	3.75
299	" " "	148.4	1.793	5.36	3.50	5.05	4.25	4.43
300*	Northern Appalachian to Trunk Line Territory	152.4	1.947	5.84	3.66	5.22	4.46	4.64
309	Southern Appalachian to the South East	110.1	1.490	4.61	2.78	3.99	3.49	3.63
312	" " "	110.3	1.686	5.26	3.06	4.28	3.86	3.99
315	" " "	108.8	1.510	4.76	2.87	4.09	3.60	3.74
317*	Northern Appalachian to Trunk Line Territory	123.2	1.840	5.84	4.88	6.49	5.85	6.18
317	" " "	151.5	2.025	6.42	3.90	5.51	4.77	4.94

330.8*	Northern Appalachian to Trunk Line Territory	104.5	1.740	5.76	5.43	7.08	6.55	6.88
335.6*	" " "	116.7	1.716	5.76	4.94	6.62	5.95	6.27
347	Southern Appalachian to the South East	116.8	1.478	5.13	2.85	4.16	3.57	3.71
356	Illinois, Indiana & Western Ky. to C.F.A.	125.8	1.573	5.60	4.30	6.00	5.17	5.49
361	Northern Appalachian to C.F.A.	158.4	1.910	6.89	4.38	6.13	5.25	5.55
369	Western Districts to Western Territory	68.6	1.802	6.65	6.87	8.74	8.69	9.00
384	Southern Appalachian to the South East	114.4	1.570	6.02	4.40	6.23	5.44	5.58
391	Illinois, Indiana & Western Ky. to C.F.A.	126.2	1.391	5.44	3.52	5.18	4.27	4.60
392**	Northern Appalachian to C.F.A.	73.9	.960	3.76	4.84	6.70	5.84	6.14
398	Northern Appalachian to C.F.A.	116.1	1.633	6.50	4.57	6.45	5.67	5.80
406*	Northern Appalachian to Trunk Line Territory	104.3	1.420	5.76	4.52	6.42	5.59	5.73

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* Export

** Lake Cargo

*** River Traffic

TABLE 53 (cont.)

Distance (Actual Miles)	Territory	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton		
						Ton and Ton-Mile (Dollars)	Car and Car-Mile (Dollars)	Dollar Basis (Dollars)
417*	Southern Appalachian to Trunk Line Territory	115.0	1.390	5.79	4.22	6.15	5.19	5.35
420	Southern Appalachian to the South East	95.6	1.270	5.34	3.32	4.83	4.21	4.34
421	Illinois, Indiana & Western Ky. to C.F.A.	108.3	1.444	6.08	3.28	4.79	4.17	4.28
422	" " "	93.8	1.294	5.46	4.32	5.93	5.37	5.66
422	" " "	96.6	1.332	5.62	4.32	5.93	5.37	5.66
428	Western Districts to Western Territory	102.1	1.070	4.60	4.13	6.16	4.93	5.40
444**	Northern Appalachian to C.F.A.	62.7	.854	3.79	5.35	7.37	6.50	6.79
453	Southern Appalachian to The South East	85.4	1.185	5.37	3.59	5.18	4.57	4.68
477	Northern Appalachian to C.F.A.	121.6	1.580	7.53	4.82	6.94	5.99	6.11
487	Illinois, Indiana & Western Ky. to C.F.A.	102.3	1.203	5.86	4.69	6.81	5.65	6.12
488	" " "	105.4	1.162	5.67	4.01	5.95	4.90	5.25
490**	Northern Appalachian to C.F.A.	59.7	.810	3.98	5.07	7.23	6.32	6.43

497	Southern Appalachian to the South East	85.5	1.170	5.82	5.15	7.33	6.42	6.53
501	Illinois, Indiana & Western Ky. to W.T.L.	111.9	1.233	6.18	3.31	5.03	4.16	4.32
506	Southern Appalachian to Trunk Line Territory	97.7	1.270	6.42	5.01	7.22	6.23	6.35
511	Illinois, Indiana & Western Ky. to W.T.L.	116.7	1.170	5.98	4.75	6.91	5.60	6.19
536	Southern Appalachian to the South East	94.2	1.138	6.10	4.94	7.25	6.13	6.27
554	Illinois, Indiana & Western Ky. to W.T.L.							
567	" " "	118.7	1.309	7.25	4.36	6.39	5.31	5.63
569	Illinois, Indiana & Western Ky. to C.F.A.	88.2	1.102	6.25	5.47	7.78	6.69	6.99
571	Illinois, Indiana & Western Ky. to W.T.L.	116.8	1.288	7.38	4.39	6.53	5.39	5.73
601*	Southern Appalachian to Trunk Line Territory	123.3	1.236	7.06	4.76	6.68	5.54	6.03
602	Illinois, Indiana & Western Ky. to C.F.A.	75.8	.985	5.92	5.61	8.13	7.02	7.11
		89.4	1.051	6.33	4.78	6.94	5.87	6.[illegible]9

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* Export

** Lake Cargo

TABLE 53 (cont.)*

Distance (Actual Miles)	Territory	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
614	Northern Appalachian to Trunk Line Territory	98.6	1.340	8.24	7.63	10.19	9.13	9.67
624	Illinois, Indiana & Western Ky. to W.T.L.	96.8	1.067	6.66	4.43	6.64	5.43	5.70
631	Southern Appalachian to the South East	100.4	1.212	7.65	5.51	8.12	6.88	6.99
640	Northern Appalachian to New England Territory	74.6	1.256	8.04	8.19	10.83	10.33	10.68
643	Illinois, Indiana & Western Ky. to W.T.L.	101.1	1.115	7.17	4.46	6.65	5.54	5.81
644	" " "	94.1	1.037	6.68	3.97	6.07	5.03	5.18
644	" " "	102.2	1.127	7.26	4.83	7.20	5.96	6.32
669	" " "	104.5	1.048	7.06	5.19	7.66	6.22	6.79
671	Western Districts to Western Territory	84.5	.929	6.23	5.55	8.28	6.73	7.27
681	Illinois, Indiana & Western Ky. to W.T.L.	78.6	.982	6.69	7.07	9.69	8.45	9.10
682	" " "	83.1	1.043	7.11	6.33	9.09	7.75	8.16

693	Southern Appalachian to the South East	90.9	1.100	7.61	5.90	8.71	7.38	7.48
697	Illinois, Indiana & Western Ky. to W.T.L.	78.4	.923	6.43	5.84	8.53	7.12	7.60
699	" " "	83.5	.983	6.87	5.72	8.29	6.99	7.38
713	Western Districts to W.T.L.	82.5	.878	6.26	5.19	8.05	6.39	6.80
723	Illinois, Indiana & Western Ky. to W.T.L.	75.6	.889	6.43	5.53	8.14	6.81	7.23
723	" " "	103.6	1.039	7.56	4.93	7.53	6.03	6.45
732	" " "	68.3	.804	6.25	7.56	10.32	8.92	9.75
733	Western Districts to W.T.L.	90.0	1.251	9.17	6.77	9.56	8.36	8.79
736	Illinois, Indiana & Western Ky. to W.T.L.	84.8	.997	7.34	5.46	8.06	6.77	7.13
745	Western Districts to Western Territory	58.0	1.055	7.86	7.75	10.70	9.87	10.16
749	" " "	83.6	1.228	9.20	7.17	10.01	8.86	9.35
759	Illinois, Indiana & Western Ky. to W.T.L.	98.7	1.088	8.26	5.40	8.09	6.66	7.06
782	Southern Appalachian to the South East	64.9	.784	6.13	6.44	9.53	8.08	8.17
791	Illinois, Indiana & Western Ky. to W.T.L.	73.8	.869	6.87	5.71	8.37	7.09	7.40
800	" " "	87.9	9.69	7.75	5.60	8.40	6.92	7.33
816	Western Districts to W.T.L.	102.1	1.053	8.59	5.63	8.77	6.92	7.37

TABLE 53 (cont.)

Distance (Actual Miles)	Territory	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
817	Illinois, Indiana & Western Ky. to W.T.L.	71.5	.841	6.87	5.84	8.58	7.27	7.58
842	Southern Appalachian to the South East	48.2	.695	5.85	5.79	8.41	7.54	7.55
849	Northern Appalachian to New England Territory	74.8	1.020	8.64	10.33	13.63	12.31	13.09
906	Western Districts to W.T.L.	105.5	1.160	10.51	6.69	9.98	7.09	8.74
909	Southern Appalachian to the South East	60.5	.830	7.53	7.84	11.34	9.96	9.95
931.9	Northern Appalachian to New England Territory	69.8	.970	9.03	11.09	15.42	9.24	14.72
1009	Western Districts to Southwestern Territory	44.5	1.024	10.33	8.06	11.76	9.95	10.55

TABLE 53A

Rate-to-Cost Ratios for Single-Car Movements with No Annual-Volume Requirements

			Ratio (%) of Rate to Fully Allocated Costs		
Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
33***	Illinois, Indiana & Western Ky. to C.F.A.	140%	97%	120%	107%
33***	" " "	182	125	156	138
33***	" " "	194	134	166	148
33	Illinois, Indiana & Western Ky. to C.F.A.	271	187	232	206
41.5***	North Appalachian to C.F.A.	83	62	73	66
85	Southern Appalachian to the South East	129	94	108	99
99***	Illinois, Indiana & Western Ky. to C.F.A.	140	96	117	107
99***	" " "	162	111	135	124
99	Illinois, Indiana & Western Ky. to C.F.A.	234	160	195	178
97	Southern Appalachian to the South East	172	124	143	132
100**	Northern Appalachian to C.F.A.	130	102	114	103
106	Western Districts to W.T.L.	134	86	113	102
122**	Northern Appalachian to C.F.A.	124	97	108	98
139	Southern Appalachian to the South East	151	108	124	115
148	Western Districts to W.T.L.	108	76	90	83
151***	Northern Appalachian to C.F.A.	74	53	62	58
156***	" " "	76	54	64	60
164	Western Districts to W.T.L.	101	70	83	77

** Lake Cargo

*** River Traffic

TABLE 53A (cont.)

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
165	Northern Appalachian to Trunk Line Territory	151%	111%	127%	119%
171***	Northern Appalachian to C.F.A.	85	61	72	67
173**	Northern Appalachian to C.F.A.	124	91	103	98
190	Western Districts to Western Territory	150	105	123	114
200	Northern Appalachian to Trunk Line Territory	139	104	115	110
206	Southern Appalachian to the South East	196	139	159	150
211	Western Districts to W.T.L.	95	70	80	73
219.8*	Northern Appalachian to Trunk Line Territory	122	94	103	96
227	Western Districts to W.T.L.	124	92	102	95
229**	Northern Appalachian to C.F.A.	122	88	101	96
230	Southern Appalachian to the South East	172	124	142	136
239	Northern Appalachian to Trunk Line Territory	109	85	92	86
246***	Illinois, Indiana & Western Ky. to C.F.A.	125	84	102	96
246***	" " "	137	92	112	105
246	Illinois, Indiana & Western Ky. to C.F.A.	190	128	155	146
246	Southern Appalachian to the South East	178	128	143	136
254	" " "	139	97	112	107
277	" " "	245	173	195	187

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* Export
** Lake Cargo
*** River Traffic

TABLE 53A (cont.)

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
283	Western Districts to W.T.L.	59%	48%	47%	45%
256	" " "	85	57	71	65
287	Illinois, Indiana & Western Ky. to C.F.A.	136	103	111	107
287	" " "	142	107	115	112
287	Southern Appalachian to the South East	124	88	102	98
291	" " "	165	118	131	127
299	" " "	153	106	126	121
300*	Northern Appalachian to Trunk Line Territory	160	112	131	126
309	Southern Appalachian to the South East	166	116	132	127
312	" " "	172	123	136	132
315	" " "	166	116	132	127
317*	Northern Appalachian to Trunk Line Territory	120	90	100	94
317	" " "	165	117	135	130
330.8*	Northern Appalachian to Trunk Line Territory	106	81	88	84
335.6*	" " "	117	87	97	92
347	Southern Appalachian to the South East	180	123	144	138
356	Illinois, Indiana & Western Ky. to C.F.A.	130	93	108	102
361	Northern Appalachian to C.F.A.	157	112	131	124
369	Western Districts to Western Territory	97	76	77	74
384	Southern Appalachian to the South East	137	97	111	108
391	Illinois, Indiana & Western Ky. to C.F.A.	155	105	127	118

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* Export

TABLE 53A (cont.)

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
392**	Northern Appalachian to C.F.A.	78%	56%	64%	61%
398	Northern Appalachian to C.F.A.	142	101	115	112
406*	Northern Appalachian to Trunk Line Territory	127	90	103	101
417*	Southern Appalachian to Trunk Line Territory	137	94	112	108
420	Southern Appalachian to the South East	161	111	127	123
421	Illinois, Indiana & Western Ky. to C.F.A.	185	127	146	142
422	" " "	126	92	102	96
422	" " "	130	95	105	99
428	Western Districts to Western Territory	111	75	93	85
444**	Northern Appalachian to C.F.A.	71	51	58	56
453	Southern Appalachian to The South East	150	104	118	115
477	Northern Appalachian to C.F.A.	156	109	126	123
		125	86	104	96
487	Illinois, Indiana & Western Ky. to C.F.A.	141	95	116	108
488	" " "	79	55	63	62
490**	Northern Appalachian to C.F.A.	113	79	91	89
497	Southern Appalachian to the South East	187	123	149	143
501	Illinois, Indiana & Western Ky. to W.T.L.	128	89	103	101
506	Southern Appalachian to Trunk Line Territory	126	87	107	97

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* Export

** Lake Cargo

TABLE 53A (cont.)

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
511	Illinois, Indiana & Western Ky. to W.T.L.	123%	84%	100%	97%
536	Southern Appalachian to the South East	166	113	137	129
554	Illinois, Indiana & Western Ky. to W.T.L.	114	80	93	89
567	" " "	168	113	137	129
569	Illinois, Indiana & Western Ky. to C.F.A.	148	107	127	117
571	Illinois, Indiana & Western Ky. to W.T.L.	106	73	84	83
601*	Southern Appalachian to Trunk Line Territory				
602	Illinois, Indiana & Western Ky. to C.F.A.	132	91	108	102
614	Northern Appalachian to Trunk Line Territory	108	81	90	85
624	Illinois, Indiana & Western Ky. to W.T.L.	150	100	103	117
631	Southern Appalachian to the South East	139	94	111	109
640	Northern Appalachian to New England Territory	98	74	78	75
643	Illinois, Indiana & Western Ky. to W.T.L.	161	108	129	123
644	" " "	168	110	133	129
644	" " "	150	101	122	115
669	" " "	136	92	114	104
671	Western Districts to Western Territory	112	75	93	86

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* Export

TABLE 53A (cont.)

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
681	Illinois, Indiana & Western Ky. to W.T.L.	94%	69%	79%	74%
682	" " "	112	78	92	87
693	Southern Appalachian to the South East	129	87	103	102
697	Illinois, Indiana & Western Ky. to W.T.L.	110	75	90	85
699	" " "	120	83	98	93
713	Western Districts to W.T.L.	121	77	98	92
723	Illinois, Indiana & Western Ky. to W.T.L.	116	79	94	89
723	" " "	153	100	125	117
732	" " "	83	61	70	64
733	Western Districts to W.T.L.	135	96	110	104
736	Illinois, Indiana & Western Ky. to W.T.L.	134	91	108	103
745	Western Districts to Western Territory	101	74	80	77
749	" " "	128	92	104	98
759	Illinois, Indiana & Western Ky. to W.T.L.	153	102	124	117
782	Southern Appalachian to the South East	95	64	76	75
791	Illinois, Indiana & Western Ky. to W.T.L.	120	82	97	93
800	" " "	138	92	112	106
816	Western Districts to W.T.L.	153	98	124	117
817	Illinois, Indiana & Western Ky. to W.T.L.	118	80	95	91
842	Southern Appalachian to the South East	101	70	78	77
849	Northern Appalachian to New England Territory	84	63	70	66

TABLE 53A (cont.)

Distance (Actual Miles)	Territory	Ratio% of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
906	Western Districts to W.T.L.	157	105	148	120
909	Southern Appalachian to the South East	96	66	76	76
931.9	Northern Appalachian to New England Territory	81	59	98	61
1009	Western Districts to Southwestern Territory	128	88	104	98

TABLE 53B

Frequency Distribution of Rate-To-Cost Ratios for Single-Car Movements with No Annual-Volume Requirements

Ratio Range (%)	Number of Rate-to-Cost Ratios			
	Rate to Variable Costs	Rate-to-Fully-Allocated Costs		
		Ton & Ton-Mile	Car & Car-Mile	Dollar Basis
(1)	(2)	(3)	(4)	(5)
Below 95	13	64	31	39
95-99	5	9	7	15
100-109	8	18	23	20
110-119	9	12	17	14
120-129	21	9	14	14
130-139	16	2	11	7
140-149	6	-0-	7	4
150-159	14	-0-	3	1
160-169	11	1	1	-0-
170-179	4	1	-0-	1
180 & over	10	1	3	2
TOTAL:	117	117	117	117

TABLE 54

Earnings, Rates and Costs for Single-Car Movements with Annual-Volume Requirements

Distance (Actual Miles)	Territory	Annual-Volume Requirement (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
103	Northern Appalachian to C.F.A.	4,300,000	194.1	2.850	2.94	3.35	4.29	3.85	4.25
107	" " "	4,300,000	160.8	2.360	2.53	3.38	4.33	3.88	4.29
113**	" " "	300,000	177.8	2.540	2.87	2.72	3.69	3.22	3.45
117	Southern Appalachian to Trunk Line Territory	800,000	155.2	1.860	2.18	2.38	3.35	2.80	3.01
328**	Northern Appalachian to C.F.A.	400,000	95.0	1.150	3.76	3.67	5.32	4.49	4.66
378	Southern Appalachian to Trunk Line Territory	125,000	113.7	1.480	5.58	4.20	6.00	5.17	5.32
411	" " "	900,000	122.2	1.470	6.06	4.05	5.75	4.95	5.19
414	Northern Appalachian to Trunk Line Territory	50,000	121.0	1.640	6.77	4.55	6.48	5.64	5.78
415	Southern Appalachian to Trunk Line Territory	900,000	113.6	1.380	5.74	4.10	5.82	5.02	5.26
519.5	Northern Appalachian to Trunk Line Territory	50,000	86.5	1.170	6.07	6.40	8.66	7.70	8.12
524.5	" " "	100,000	84.9	1.250	6.55	6.87+	9.14	8.30	8.71
614.9	" " "	50,000	75.8	1.110	6.85	8.12	10.68	9.75	10.29

+ Car float costs not included.

** Lake Cargo.

TABLE 54A

Rate-to-Cost Ratios for Single-Car Movements with Annual-Volume Requirements

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
103	Northern Appalachian to C.F.A.	88	69	76	69
107	" " "	75	58	65	59
113**	" " "	106	78	89	83
117	Southern Appalachian to Trunk Line Territory	92	65	78	72
328**	Northern Appalachian to C.F.A.	102	71	84	81
378	Southern Appalachian to Trunk Line Territory	133	93	108	105
411	" " "	150	105	122	117
414	Northern Appalachian to Trunk Line Territory	149	104	120	117
415	Southern Appalachian to Trunk Line Territory	140	99	114	109
519.5	Northern Appalachian to Trunk Line Territory	95	70	79	75
524.5	" " "	95	72	79	75
614.9	" " "	84	64	70	67

**Lake Cargo

TABLE 54B

Frequency Distribution of Rate-to-Cost Ratios for Single-Car Movements with Annual-Volume Requirements

Ratio Range (%) (1)	Number of Rate-to-Cost Ratios			
	Rate to Variable Costs (2)	Rate to Fully Allocated Costs		
		Ton & Ton-Mile (3)	Car & Car-Mile (4)	Dollar Basis (5)
Below 95	4	9	8	8
95 - 99	2	1	0	0
100 - 109	2	2	1	2
110 - 119	0	0	1	2
120 - 129	0	0	2	0
130 - 139	1	0	0	0
140 - 149	2	0	0	0
150 - 159	1	0	0	0
160 - 169	0	0	0	0
170 - 179	0	0	0	0
180 and over	0	0	0	0
Total	12	12	12	12

TABLE 55

Earnings, Rates and Costs for Multiple-Car Movements with No Annual–Volume Requirements

Distance (Actual (Miles)	Territory	Minimum Requirement Per Shipment (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
33	Illinois, Indiana & Western Ky. to C.F.A.	1,500	448.0	4.939	1.63	.70	1.18	.88	.91
33	" " "	1,250	640.4	7.060	2.33	.70	1.18	.88	.91
99	" " "	1,500	183.2	2.020	2.00	1.04	1.69	1.31	1.35
99	" " "	1,250	251.9	2.777	2.75	1.04	1.69	1.31	1.35
122.5	Northern Appalachian to C.F.A.	350	229.6	3.020	3.70	2.40	3.40	2.87	3.04
137.1	" " "	1,500	224.7	2.810	3.85	2.41	3.42	2.86	3.02
163	" " "	1,500	225.3	3.090	5.03	2.74	3.86	3.31	3.47
184	" " "	1,500	189.2	2.590	4.77	2.29	3.48	2.91	2.90
112	Western Districts to W.T.L.	5 cars	141.0	1.940	2.17	1.83	2.96	2.33	2.39
199	Southern Appalachian to the South East	1,000	176.7	1.900	3.79	1.48	2.40	1.89	1.93
239	Illinois, Indiana & Western Ky. to C.F.A.	1,250	72.3	.967	2.31	2.54	4.04	3.24	3.32
246	" " "	1,250	126.8	3.020	3.44	1.72	2.77	2.21	2.25

266*	Northern Appalachian to Trunk Line Territory	1,500	143.5	2.030	5.39	3.49	4.94	4.31	4.43
269	” ” ”	1,500	147.4	2.190	5.89	4.29	5.75	5.15	5.44
270	Southern Appalachian to the South East	1,300	65.8	.970	2.61	2.22	3.32	2.91	2.89
277	” ” ”	1,000	100.3	1.420	3.92	2.19	3.32	2.87	2.86
287	Illinois, Indiana & Western Ky. to C.F.A.	2,500	97.2	1.359	3.90	3.01	4.52	3.86	3.81
287	” ” ”	1,000	115.1	1.610	4.62	3.01	4.53	3.86	3.81
356	” ” ”	1,000	109.2	1.365	4.86	3.52	5.24	4.34	4.59
421	” ” ”	2,500	83.9	1.119	4.71	2.86	4.36	3.75	3.73
421	” ” ”	1,000	96.4	1.285	5.41	2.86	4.36	3.74	3.73
422	Illinois, Indiana & Western Ky. to C.F.A.	2,500	73.8	.972	4.10	3.58	5.60	4.58	4.69
422	” ” ”	2,500	76.0	1.000	4.22	3.58	5.60	4.58	4.69
422	” ” ”	1,000	82.5	1.137	4.80	3.70	5.72	4.74	4.84
422	” ” ”	1,000	84.9	1.171	4.94	3.70	5.72	4.74	4.84
443.9	Northern Appalachian to Trunk Line Territory	1,500	92.1	1.390	6.19	4.93	6.95	6.21	6.25
487	Illinois, Indiana & Western Ky. to C.F.A.	1,000	88.7	1.083	5.08	4.10	6.19	5.05	5.35
576	Southern Appalachian to Trunk Line Territory	1,500	96.3	1.260	7.23	5.26	7.70	6.62	6.67

*Export

TABLE 55 (cont.)

Distance (Actual (Miles)	Territory	Minimum Requirement Per Shipment (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
585	” ” ”	1,500	116.8	1.240	7.23	5.09	7.55	6.21	6.45
601	” ” ”	1,500	106.7	1.260	7.58	5.58	8.10	6.86	7.08
602	Illinois, Indiana & Western Ky. to C.F.A.	1,000	76.5	.900	5.42	4.28	6.43	5.36	5.54
644	Western Districts to W.T.L.	1,500	78.3	.900	5.79	4.82	7.36	5.97	6.30
660	” ” ”	1,400	97.7	1.177	7.77	5.22	7.92	6.49	6.84
709	Southern Appalachian to South East	1,500	69.4	.870	6.14	5.33	8.19	6.89	6.76
748	Southern Appalachian to Trunk Line Territory	1,500	78.0	1.010	7.58	6.34	9.32	8.03	8.04
774	Southern Appalachian to South East	1,500	59.3	.790	6.14	5.99	9.06	7.79	7.60
893	Western Districts to W.T.L.	1,500	67.1	.900	7.99	6.95	10.31	8.74	9.10
894	Southern Appalachian to Trunk Line Territory	1,500	65.4	.850	7.59	8.38	11.83	10.36	10.63
946	Western Districts to W.T.L.	1,000	65.4	.874	8.27	6.55	10.07	8.36	8.58
993	” ” ”	1,000	84.4	1.017	10.10	6.55	9.93	8.28	8.57

TABLE 55A

Rate-to-Cost Ratios for Multiple-Car Movements with No Annual-Volume Requirements

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
33	Illinois, Indiana & Western Ky. to C.F.A.	233	138	185	179
33	" " "	333	197	265	256
99	" " "	192	118	153	148
99	" " "	264	163	210	204
122.5	Northern Appalachian to C.F.A.	154	109	129	122
137.1	" " "	160	113	135	127
163	" " "	184	130	152	145
184	" " "	208	137	164	164
112	Western Districts to W.T.L.	119	73	93	91
199	Southern Appalachian to the South East	256	158	201	196
239	Illinois, Indiana & Western Ky. to C.F.A.	91	57	71	70
246	" " "	200	124	156	153
266*	Northern Appalachian to Trunk Line Territory	154	109	125	122
269	" " "	137	102	114	108
270	Southern Appalachian to the South East	118	79	90	90
277	" " "	179	118	137	137
287	Illinois, Indiana & Western Ky. to C.F.A.	130	86	101	102
287	" " "	153	102	120	121
356	" " "	138	93	112	106
421	" " "	165	108	126	126
421	" " "	189	124	145	145
422	Illinois, Indiana & Western Ky. to C.F.A.	115	73	90	87
422	" " "	118	75	92	90
422	" " "	130	84	101	99

*Export

TABLE 55A (cont.)

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
422	" " "	134	86	104	102
443.9	Northern Appalachian to Trunk Line Territory	126	89	100	99
487	Illinois, Indiana & Western Ky. to C.F.A.	124	82	101	95
576	Southern Appalachian to Trunk Line Territory	137	94	109	108
585	" " "	142	96	116	112
601	" " "	136	94	110	107
602	Illinois, Indiana & Western Ky. to C.F.A.	127	84	101	98
644	Western Districts to W.T.L.	120	79	97	92
660	" " "	149	98	120	114
709	Southern Appalachian to South East	115	75	89	91
748	Southern Appalachian to Trunk Line Territory	120	81	94	94
774	Southern Appalachian to South East	103	68	79	81
893	Western Districts to W.T.L.	115	77	91	88
894	Southern Appalachian to Trunk Line Territory	91	64	73	71
946	Western Districts to W.T.L.	126	82	99	96
993	" " "	154	102	122	118

TABLE 55B

Frequency Distribution of Rate-to-Cost Ratios for Multiple-Car Movements with No Annual-Volume Requirements

Ratio Range (%)	Number of Rate-to-Cost Ratios			
	Rate to Variable Costs	Rate to Fully Allocated Costs		
		Ton & Ton-Mile	Car & Car-Mile	Dollar Basis
(1)	(2)	(3)	(4)	(5)
Below 95	2	21	10	11
95 - 99	0	2	2	5
100 - 109	1	6	7	6
110 - 119	6	3	4	3
120 - 129	6	2	6	5
130 - 139	7	3	2	1
140 - 149	2	0	1	3
150 - 159	4	1	3	1
160 - 169	2	1	1	1
170 - 179	1	0	0	1
180 and over	9	1	4	3
Total	40	40	40	40

TABLE 56

Earnings, Rates and Costs for Multiple-Car Movements with Annual-Volume Requirements

							Fully Allocated Cost Per Net Ton		
Distance (Actual) Miles)	Territory	Annual-Volume Requirement (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Ton and Ton-Mile (Dollars)	Car and Car-Mile (Dollars)	Dollar Basis (Dollars)
342	Southern Appalachian to the South East	450,000	73.2	1.120	3.82	2.68	3.98	3.54	3.50
360	" " "	140,000	82.6	1.080	3.90	2.52	3.86	3.29	3.28
401	" " "	450,000	71.8	1.090	4.39	3.01	4.46	3.98	3.92
449	" " "	1,750,000	75.0	1.040	4.68	3.08	4.66	4.06	4.02
480	" " "	1,750,000	91.3	1.100	5.29	3.89	6.02	4.98	4.94
501	Illinois, Indiana & Western Ky. to W.T.L.	100,000	97.6	1.075	5.39	2.92	4.64	3.77	3.81
523	" " "	50,000	86.1	1.080	5.65	5.09	7.28	6.23	6.54
549	Southern Appalachian to the South East	1,750,000	68.3	.940	5.14	4.68	7.03	6.06	5.94
554	" " "	1,750,000	77.3	.880	4.90	3.23	5.09	4.19	4.22
567	Illinois, Indiana & Western Ky. to W.T.L.	100,000	72.8	.915	5.19	5.37	7.67	6.59	6.87
567	" " "	40,000	82.4	1.030	5.84	5.36	7.66	6.57	6.85
624	" " "	50,000	85.0	.937	5.85	3.91	6.05	4.97	5.10
643	" " "	50,000	89.9	.990	6.37	4.00	6.19	5.08	5.21
644	" " "	100,000	83.2	.917	5.91	3.59	5.68	4.64	4.68
644	" " "	30,000	90.7	1.000	6.44	4.48	6.90	5.57	5.86

TABLE 56 (cont.)

Earnings, Rates and Costs for Multiple-Car Movements with Annual-Volume Requirements

Distance (Actual Miles)	Territory	Annual-Volume Requirement (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
677	Southern Appalachian to the South East	525,000	47.3	.690	4.65	4.35	6.54	5.80	5.68
682	Illinois, Indiana & Western Ky. to W.T.L.	30,000	73.2	.918	6.26	7.55	8.38	7.05	7.25
697	" " "	40,000	73.5	.865	6.03	5.22	7.91	6.50	6.80
723	" " "	100,000	70.9	.834	6.03	5.01	7.62	6.29	6.55
732	" " "	100,000	63.8	.751	5.84	6.06	8.83	7.43	7.81
735	" " "	30,000	69.8	.876	6.44	5.92	8.82	7.42	7.64
791	" " "	100,000	69.7	.820	6.49	5.21	7.88	6.59	6.76
800	" " "	30,000	78.0	.860	6.88	6.96	7.92	6.44	6.70
817	" " "	40,000	67.5	.794	6.49	5.35	8.10	6.78	6.94

TABLE 56A

Rate-to-Cost-Ratios for Multiple-Car Movements with Annual-Volume Requirements

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
342	Southern Appalachian to the South East	143%	96%	108%	109%
360	" " "	155	101	119	119
401	" " "	146	98	110	112
449	" " "	152	100	115	116
480	" " "	136	88	106	107
501	Illinois, Indiana & Western Ky. to W.T.L.	185	116	143	141
523	" " "	111	78	91	86
549	Southern Appalachian to the South East	110	73	85	87
554	" " "	152	96	117	116
567	Illinois, Indiana & Western Ky. to W.T.L.	97	68	79	76
567	" " "	109	76	89	85
624	" " "	150	97	118	115
643	" " "	159	103	125	122
644	" " "	165	104	127	126
644	" " "	144	93	116	110
677	Southern Appalachian to the South East	107	71	80	82
682	Illinois, Indiana & Western Ky. to W.T.L.	83	75	89	86
697	" " "	116	76	93	89
723	" " "	120	79	96	92
732	" " "	96	66	79	75
735	" " "	109	73	87	84
791	" " "	125	82	98	96
800	" " "	99	87	107	103
817	" " "	121	80	96	94

TABLE 56B

Frequency Distribution of Rate-To-Cost Ratios for Multiple-Car Movements with Annual-Volume Requirements

Ratio Range (%)	Number of Rate-to-Cost Ratios			
	Rate to Variable Costs	Rate-to-Fully-Allocated Costs		
		Ton & Ton-Mile	Car & Car-Mile	Dollar Basis
(1)	(2)	(3)	(4)	(5)
Below 95	1	15	9	11
95 - 99	3	4	3	1
100 - 109	3	4	3	3
110 - 119	3	1	6	6
120 - 129	3	0	2	2
130 - 139	1	0	0	0
140 - 149	3	0	1	1
150 - 159	5	0	0	0
160 - 169	1	0	0	0
170 - 179	0	0	0	0
180 & over	1	0	0	0
TOTAL:	24	24	24	24

TABLE 57

Earnings, Rates and Costs for Trainload Movements in Carrier's Equipment with No Annual-Volume Requirements.

Distance (Actual Miles)	Territory	Minimum Requirement Per Trainload (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton		
							Ton and Ton-Mile (Dollars)	Car and Car-Mile (Dollars)	Dollar Basis (Dollars)
23	Illinois, Indiana & Western Ky. to C.F.A.	5,500	530.4	5.304	1.22	.66	1.21	.83	.85
148.9**	Northern Appalachian to C.F.A.	5,000	244.9	2.580	3.84	1.27	2.35	1.69	1.61
215	Northern Appalachian to Trunk Line Territory	7,000	147.0	2.040	4.39	2.22	3.51	2.91	2.81
255	" " "	7,000	130.8	1.850	4.71	2.17	3.59	2.96	2.75
256.2	" " "	7,000	121.7	1.710	4.39	2.78	4.20	3.57	3.52
267	" " "	7,000	112.2	1.760	4.71	2.40	3.86	3.31	3.05
294**	Western Ky. to C.F.A.	7,000	78.2	1.071	3.15	2.34	3.88	3.19	2.97
314	Northern Appalachian to Trunk Line Territory	7,000	109.6	1.390	4.35	2.33	3.94	3.15	2.96
316	" " "	7,000	106.3	1.460	4.60	3.05	4.66	3.95	3.87
352**	Northern Appalachian to C.F.A.	5,000	122.3	1.330	4.68	2.31	4.04	3.08	2.93
370**	" " "	5,000	97.4	1.260	4.68	2.68	4.46	3.63	3.39

TABLE 57 (cont.)

Distance (Actual Miles)	Territory	Minimum Requirement Trainload (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
364	Illinois, Indiana & Western Ky. to C.F.A.	10,000	90.1	1.126	4.10	2.77	4.50	3.65	3.53
405**	Northern Appalachian to C.F.A.	5,000	100.3	1.210	4.90	2.74	4.63	3.69	3.48
412	Northern Appalachian to Trunk Line Territory	7,000	83.8	1.250	5.15	3.45	5.37	4.64	4.38
421**	Western Ky. to C.F.A.	7,000	69.0	.891	3.75	2.73	4.89	3.99	3.73
422**	" " "	7,000	62.3	.803	3.39	2.61	4.84	3.79	3.69
422	Illinois, Indiana & Western Ky. to C.F.A.	5,000	67.2	.896	3.78+	2.66	4.90	3.89	3.77
439	Northern Appalachian to C.F.A.	5,000	103.5	1.340	5.90	3.34	5.61	4.70	4.58
443.2	Northern Appalachian to Trunk Line Territory	7,000	79.6	1.085	4.81	3.75	6.06	5.20	5.13
444**	Northern Appalachian to C.F.A.	6,000	58.3	.790	3.52	3.21	5.48	4.61	4.39

** Lake Cargo

+ Applies on Metallurgical or coking bituminous coal only

449	Northern Appalachian to Trunk Line Territory	7,000	73.9	1.071	4.81	3.37	5.67	4.87	4.61
450	" " "	7,000	93.3	1.170	5.25	3.07	5.34	4.38	4.19
451	" " "	7,000	108.2	1.120	5.03	2.73	4.99	3.83	3.74
468	Illinois, Indiana & Western Ky. to C.F.A.	10,000	79.0	.929	4.35	2.83	5.10	4.00	4.01
477	Western Districts to W.T.L.	50 cars	71.7	.920	4.39	2.75	5.15	3.96	3.89
482	Northern Appalachian to Trunk Line Territory	7,000	72.4	1.080	5.20	4.80	7.31	6.52	6.56
492	Northern Appalachian to C.F.A.	7,200	97.2	1.260	6.21	3.09	5.51	4.53	4.23
505	Northern Appalachian to Trunk Line Territory	7,000	70.2	.970	4.89	3.83	6.34	5.42	5.23
569	" " "	7,000	64.2	.910	5.16	4.22	6.97	6.02	5.78
605#	" " "	7,000	97.3	1.160	7.01	3.96	6.80	5.57	5.42
608	" " "	7,000	56.5	.860	5.20	4.94	7.86	6.98	6.75
619	Illinois, Indiana & Western Ky. to C.F.A.	10,000	64.7	.760	4.71	3.24	5.65	4.59	4.50
619#	Northern Appalachian to Trunk Line Territory	7,000	87.0	1.080	6.66	3.74	6.61	5.20	5.12
660	Western Districts to W.T.L.	5,000	70.6	.850	5.61	3.57	6.56	5.13	5.05
747	" " "	90 cars	57.0	.687	5.13	4.13	7.30	5.85	5.83

Transshipment

TABLE 57 (cont.)

Distance (Actual Miles)	Territory	Minimum Requirement Per Trainload (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
1014	Western Districts to W.T.L.	6,600	52.8	.636	6.54	5.16	9.28	7.38	7.30
1029	" " "	100 cars	64.1	.773	7.95	5.23	9.40	7.47	7.39
1089	" " "	10,000	52.2	.689	7.50	5.50	9.86	7.85	7.77
1089	" " "	5,000	61.7	.744	8.10	5.50	9.86	7.86	7.77
1192	" " "	10,000	57.1	.687	8.19	5.96	10.66	8.51	8.43
1192	" " "	5,000	61.6	.742	8.84	5.96	10.66	8.51	8.43
1342	Western Districts to C.F.A.	10,000	58.8	.783	9.50	6.52	11.42	9.27	9.20
1342	" " "	5,000	65.0	.782	10.50	6.53	11.42	9.27	9.20

TABLE 57A

Rate-to-Cost Ratios for Trainload Movements in Carrier's Equipment with No Annual-Volume Requirements

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
23	Illinois, Indiana & Western Ky. to C.F.A.	185	101	147	144
148.9**	Northern Appalachian to C.F.A.	302	163	227	239
215	Northern Appalachian to Trunk Line Territory	198	125	151	156
255	" " "	217	131	159	171
256.2	" " "	158	105	123	125
267	" " "	196	122	142	154
294**	Western Ky. to C.F.A.	135	81	99	106
314	Northern Appalachian to Trunk Line Territory	187	110	138	147
316	" " "	151	99	116	119
352**	Northern Appalachian to C.F.A.	203	116	152	160
370**	" " "	175	105	129	138
364	Illinois, Indiana & Western Ky. to C.F.A.	148	91	112	116
405**	Northern Appalachian to C.F.A.	179	106	133	141
412	Northern Appalachian to Trunk Line Territory	149	96	111	118
421**	Western Ky. to C.F.A.	137	77	94	101
422**	" " "	130	70	89	92
422	Illinois, Indiana & Western Ky. to C.F.A.	142	77	97	100
439	Northern Appalachian to C.F.A.	177	105	126	129
443.2	Northern Appalachian to Trunk Line Territory	128	79	93	94

** Lake Cargo

TABLE 57A (cont.)

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
444**	Northern Appalachian to C.F.A.	110	64	76	80
449	Northern Appalachian to Trunk Line Territory	143	85	99	104
450	" " "	171	98	120	125
451	" " "	184	101	131	134
468	Illinois, Indiana & Western Ky. to C.F.A.	154	85	109	108
477	Western Districts to W.T.L.	160	85	111	113
482	Northern Appalachian to Trunk Line Territory	108	71	80	79
492	Northern Appalachian to C.F.A.	201	113	137	147
505	Northern Appalachian to Trunk Line Territory	128	77	90	93
569	" " "	122	74	86	89
605#	" " "	177	103	126	129
608	" " "	105	66	74	77
619	Illinois, Indiana & Western Ky. to C.F.A.	145	83	103	105
619#	Northern Appalachian to Trunk Line Territory	178	101	128	130
660	Western Districts to W.T.L.	157	86	109	111
747	" " "	124	70	88	88
1014	" " "	129	72	90	91
1029	" " "	152	85	106	108
1089	" " "	136	76	96	97
1089	" " "	147	82	103	104
1192	" " "	137	77	96	97
1192	" " "	148	83	104	105
1342	Western Districts to C.F.A.	145	83	102	103
1342	" " "	161	92	113	114

# Transshipment

TABLE 57B

Frequency Distribution of Rate-to-Cost Ratios for Trainload Movements in Carrier's Equipment with No Annual-Volume Requirement

	Number of Rate-to-Cost Ratios			
	Rate to	Rate to Fully Allocated Costs		
Ratio Range (%) (1)	Variable Costs (2)	Ton & Ton-Mile (3)	Car & Car-Mile (4)	Dollar Basis (5)
Below 95	0	25	10	9
95 - 99	0	3	5	2
100 - 109	2	8	7	10
110 - 119	1	3	5	6
120 - 129	5	2	6	4
130 - 139	5	1	4	3
140 - 149	8	0	2	4
150 - 159	5	0	3	2
160 - 169	2	1	0	1
170 - 179	6	0	0	1
180 and over	9	0	1	1
Total	43	43	43	43

TABLE 58

Earnings, Rates and Costs for Trainload Movements in Carrier's Equipment with Annual-Volume Requirements

Distance (Actual Miles)	Territory	Minimum Requirement Per Trainload (Tons)	Annual-Volume Requirement (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton		
								Ton and Ton-Mile (Dollars)	Car and Car-Mile (Dollars)	Dollar Basis (Dollars)
33***	Illinois, Indiana & Western Ky. to C.F.A.	5,500	2,500,000	393.9	3.939	1.30	.70	1.27	.88	.90
34	Illinois, Indiana & Western Ky. to C.F.A.	3,600	2,250,000	163.2	2.147	.73	.89	1.80	1.25	1.16
34	" " "	3,500	2,000,000	172.1	2.264	.77	.89	1.80	1.25	1.16
34	" " "	3,400	1,500,000	183.3	2.412	.82	.89	1.80	1.25	1.16
34	" " "	2,950	1,300,000	187.8	2.470	.84	.89	1.80	1.25	1.16
103	" " "	5,400	900,000	235.9	2.359	2.43	1.04	1.86	1.35	1.36
128**	Northern Appalachian to C.F.A.	6,000	3,000,000	166.9	2.190	2.80	1.65	2.66	2.14	2.09
172	Western Districts to W.T.L.	30 cars	1,400,000	124.4	1.270	2.19	1.33	2.64	1.79	1.74
248	Southern Appalachian to the South East	5,760	900,000	65.2	.850	2.10	1.58	2.63	2.16	2.06
282	" " "	8,600	1,540,000	84.1	.760	2.15	1.41	2.55	1.85	1.84
282	" " "	6,130	1,100,000	86.8	.780	2.22	1.41	2.55	1.85	1.84
312	" " "	9,800	1,750,000	99.6	.900	2.81	1.53	2.74	2.00	1.99

312***	Illinois, Indiana & Western Ky. to C.F.A.	10,000	1,500,000	113.1	1.131	3.53	1.89	3.23	2.45	2.45
312***	" " "	10,000	1,500,000	117.3	1.173	3.66	1.89	3.23	2.45	2.45
335	Southern Appalachian to the South East	9,000	1,200,000	82.4	.920	3.07	2.26	3.93	3.01	2.87
348	" " "	5,000	2,500,000	106.0	1.310	4.56	2.48	4.19	3.35	3.14
352	Western Districts to W.T.L.	3,100	1,300,000	86.4	.860	3.04	2.11	3.93	2.78	2.77
357	" " "	6,500	3,000,000	53.4	.570	2.02	1.85	3.19	2.47	2.41
361**	Northern Appalachian to C.F.A.	6,000	11,000,000	84.0	1.150	4.16-1/2	2.72	4.48	3.71	3.45
361	Norhtern Appalachian to C.F.A.	9,500	480,000	111.7	1.240	4.47	2.39	4.14	3.19	3.03
362	" " "	4,500	1,000,000	96.2	1.220	4.41	3.41	5.16	4.32	4.32
391	Southern Appalachian to the South East	5,760	3,600,000	65.3	.850	3.33	2.24	3.67	3.06	2.97
427**	Northern Appalachian to C.F.A.	6,000	2,000,000	58.1	.840	3.58	3.19	5.15	4.37	4.04
479	Southern Appalachian to the South East	9,000	1,000,000	47.3	.610	2.94	3.55	5.67	4.71	4.50
498	" " "	6,000	1,500,000	68.9	.702	3.43	2.67	4.49	3.48	3.46
546	Western Districts to Western Territory	8,400	700,000	100.0	1.000	5.46	3.40	5.78	4.32	4.45
555	Southeran Appalachian to the South East	5,000	2,000,000	68.1	.810	4.49	3.50	5.86	4.70	4.43
580	" " "	5,000	2,000,000	54.9	.710	4.13	3.10	5.03	4.24	4.05
644	Western Districts to W.T.L.	1,500	60,000	78.3	.900	5.79	3.86	6.40	5.02	5.05

** Lake Cargo
*** River Traffic

TABLE 58 (cont.)

Distance (Actual Miles)	Territory	Minimum Requirement Per Trainload (Tons)	Annual-Volume Requirement (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Car and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis Car-Mile (Dollars)
693	Southern Appalachian to the South East	6,500	700,000	57.7	.610	4.23	3.25	5.47	4.33	4.24
773	Western Districts to W.T.L.	102 cars	1,750,000	43.7	.446	3.23	4.03	7.05	5.25	5.27
773	" " "	102 cars	1,500,000	43.7	.446	3.45	4.03	7.05	5.25	5.27
773	" " "	102 cars	1,000,000	43.7	.446	3.69	4.03	7.05	5.25	5.27
793	" " "	6,600	700,000	59.6	.597	4.73	4.07	7.15	5.30	5.33
804	" " "	6,600	400,000	62.2	.622	5.00	4.12	7.23	5.36	5.40
967	" " "	5,300	200,000	59.9	.600	5.89	4.85	8.43	6.29	6.35
970	" " "	5,300	200,000	61.9	.619	6.00	4.86	8.45	6.30	6.37
979	" " "	5,300	200,000	62.2	.622	6.09	4.90	8.51	6.36	6.42
1002	Western Districts to W.T.L.	5,300	200,000	57.9	.579	5.80	5.00	8.68	6.49	6.55
1005	" " "	5,000	200,000	59.7	.597	6.00	5.02	8.70	6.50	6.57
1014	" " "	5,300	200,000	60.1	.601	6.09	5.05	8.77	6.56	6.62
1029	" " "	97 cars	1,300,000	62.5	6.25	6.43	5.12	8.87	6.64	6.71
1047	Western Districts to Western Territory	6,400	500,000	65.1	.660	6.86	5.63	9.44	7.17	7.37
1086	" " "	84 cars	700,000	61.3	.613	6.66	5.38	9.29	6.97	7.04
1086	" " "	84 cars	500,000	70.5	.705	7.66	5.38	9.29	6.97	7.04

1089	Western Districts to Western Trunk Line	97 cars	500,000	64.0	.640	6.97	5.39	9.32	6.98	7.06
1122	" " "	9,000	1,550,000	58.6	.590	6.57	5.67	9.58	7.30	7.38
1154	" " "	9,000	450,000	66.2	.660	7.64	6.07	10.08	7.75	7.88
1176	" " "	97 cars	3,300,000	74.1	.733	8.62	5.96	10.04	7.63	7.78
1276	" " "	97 cars	2,000,000	73.1	.731	9.30	6.19	10.38	7.97	8.10
1276	" " "	97 cars	1,500,000	73.1	.731	9.33	6.19	10.38	7.97	8.10
1276	" " "	9,500	1,000,000	73.1	.731	9.42	6.19	10.38	7.97	8.10
1129	" " "	10,000	900,000	69.6	.756	8.54	6.05	10.00	7.81	7.90
1279	" " "	10,000	900,000	69.7	.697	8.91	6.45	10.82	8.26	8.42

TABLE 58A

Rate-to-Cost Ratios for Trainload Movements in Carrier's Equipment with Annual-Volume Requirements

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
33***	Illinois, Indiana & Western Ky. to C.F.A.	186%	102%	148%	144%
34	Illinois, Indiana & Western Ky. to C.F.A.	82	41	58	63
34	" " "	86	43	62	66
34	" " "	92	46	66	71
34	" " "	94	47	67	72
103	" " "	234	131	180	178
128**	Northern Appalachian to C.F.A.	170	105	131	134
172	Western Districts to W.T.L.	165	83	122	126
248	Southern Appalachian to the South East	133	80	97	102
282	" " "	152	84	116	117
282	" " "	157	87	120	121
312	" " "	184	103	141	141
312***	Illinois, Indiana & Western Ky. to C.F.A.	187	109	144	144
312***	" " "	194	113	149	149
335	Southern Appalachian to the South East	136	78	102	107
348	" " "	184	109	136	145
352	Western Districts to W.T.L.	144	77	109	110
357	" " "	109	63	82	84
361**	Northern Appalachian to C.F.A.	153	93	112	121
361	Northern Appalachian to C.F.A.	187	108	140	148
362	" " "	129	85	102	102
391	Southern Appalachian to the South East	149	91	109	112

** Lake Cargo
*** River Traffic

TABLE 58A (cont.)

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
427**	Northern Appalachian to C.F.A.	112%	70%	82%	89%
479	Southern Appalachian to the South East	83	52	62	65
498	" " "	128	76	99	99
546	Western Districts to Western Territory	161	94	126	123
555	Southern Appalachian to the South East	128	77	96	101
580	" " "	133	82	97	102
644	Western Districts to W.T.L.	150	90	115	115
693	Southern Appalachian to the South East	130	77	98	100
773	Western Districts to W.T.L.	80	46	62	61
773	" " "	86	49	66	65
773	" " "	92	52	70	70
793	" " "	116	66	89	89
804	" " "	121	69	93	93
967	" " "	120	69	92	91
970	" " "	123	71	95	94
979	" " "	124	72	96	95
1002	Western Districts to W.T.L.	116	67	89	89
1005	" " "	120	69	92	91
1014	" " "	121	69	93	92
1029	" " "	126	72	97	96
1047	Western Districts To Western Territory	122	73	96	93
1086	" " "	124	72	96	95
1086	" " "	142	82	110	109
1089	Western Districts to Western Trunk Line	129	75	100	99
1122	" " "	116	69	90	89
1154	" " "	126	76	99	97
1176	" " "	145	86	113	111
1276	" " "	150	90	117	115
1276	" " "	151	90	117	115
1276	" " "	152	91	118	116
1129	" " "	141	85	109	108
1279	" " "	138	82	108	106

** Lake Cargo
345 I.C.C.

TABLE 58B

Frequency Distribution of Rate-To-Cost Ratios for Trainload Movements in Carrier's Equipment with Annual-Volume Requirements

Ratio Range % (1)	Number of Rate-to-Cost Ratios			
	Rate to Variable Costs (2)	Rate to Fully Allocated Costs		
		Ton & Ton-Mile (3)	Car & Car-Mile (4)	Dollar Basis (5)
Below 95	8	46	19	19
95 - 99	0	0	9	6
100 - 109	1	6	7	9
110 - 119	4	1	8	8
120 - 129	14	0	3	4
130 - 139	5	1	2	1
140 - 149	5	0	5	6
150 - 159	7	0	0	0
160 - 169	2	0	0	0
170 - 179	1	0	0	1
180 & over	7	0	1	0
TOTAL:	54	54	54	54

TABLE 59

Earnings, Rates and Costs for Trainload Movements in Shipper's Equipment with No Annual-Volume Requirements

Distance (Actual Miles)	Territory	Minimum Requirement Per Trainload (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Ton (Dollars)	Fully Allocated Cost Per Net Ton		
							Ton and Ton-Mile (Dollars)	Car and Car-Mile (Dollars)	Dollar Basis (Dollars)
23***	Illinois, Indiana & Western Ky. to C.F.A.	5,500	413.0	4.130	.95	.43	.93	.59	.58
284	" " "	9,500	60.9	.609	1.73	1.35	2.48	1.82	1.81
294	" " "	10,000	74.5	1.020	3.00	1.74	3.15	2.52	2.28
352	Northern Appalachian to C.F.A.	9,750	89.2	.880	3.11	2.03	3.61	2.68	2.67
357	" " "	98 cars	86.9	.888	3.11	1.92	3.52	2.59	2.52
379.9	" " "	17,000	60.7	.500	1.90	1.93	3.59	2.48	2.53
421	Illinois, Indiana & Western Ky. to C.F.A.	10,000	66.8	.862	3.63	2.29	4.07	3.28	3.00
422	" " "	10,000	58.9	.765	3.23	2.27	4.13	3.18	3.04
429.7	Northern Appalachian to C.F.A.	9,750	86.6	.870	3.73	2.20	4.01	2.96	2.89
450	" " "	10,000	82.1	.830	3.73	2.46	4.32	3.25	3.22
478	Illinois, Indiana & Western Ky. to C.F.A.	11,500	62.8	.627	3.00	2.23	3.89	3.06	3.01
528	Northern Appalachian to Trunk Line Territory	10,000	81.4	.820	4.33	2.61	4.70	3.51	3.42
634	Illinois, Indiana & Western Ky. to C.F.A.	11,500	53.6	.536	3.40	2.61	4.65	3.50	3.51

***River Traffic

TABLE 59A

Rate-to-Cost Ratios for Trainload Movements in Shipper's Equipment with Annual-Volume Requirements

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
23***	Illinois, Indiana & Western Ky. to C.F.A.	221	102	161	164
284	" " "	128	70	95	96
294	" " "	172	95	119	132
352	Northern Appalachian to C.F.A.	153	86	116	116
357	" " "	162	88	120	123
379.9	" " "	98	53	77	75
421	Illinois, Indiana & Western Ky. to C.F.A.	159	89	111	121
422	" " "	142	78	102	106
429.7	Northern Appalachian to C.F.A.	170	93	126	129
450	" " "	152	86	115	116
478	Illinois, Indiana & Western Ky. to C.F.A.	135	77	98	100
528	Northern Appalachian to Trunk Line Territory	166	92	123	127
634	Illinois, Indiana & Western Ky. to C.F.A.	130	73	97	97

***River Traffic

TABLE 59B

Frequency Distribution of Rate-to-Cost Ratios for Trainload Movements in Shipper's Equipment with No Annual-Volume Requirements

Ratio Range (%) (1)	Number of Rate-to-Cost Ratios			
	Rate to Variable Costs (2)	Rate to Fully Allocated Costs		
		Ton & Ton-Mile (3)	Car & Car-Mile (4)	Dollar Basis (5)
Below 95	0	11	1	1
95 - 99	1	1	3	2
100 - 109	0	1	1	2
110 - 119	0	0	4	2
120 - 129	1	0	3	4
130 - 139	2	0	0	1
140 - 149	1	0	0	0
150 - 159	3	0	0	0
160 - 169	2	0	1	1
170 - 179	2	0	0	0
180 and over	1	0	0	0
Total	13	13	13	13

TABLE 60

Earnings, Rates and Costs for Trainload Movements in Shipper's Equipment With Annual-Volume Requirements

Distance (Actual Miles)	Territory	Minimum Requirement Per Trainload (Tons)	Annual-Volume Requirement (Tons)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis
33	Illinois, Indiana & Western Ky. to C.F.A.	5,500	2,500,000	30.60	3.061	1.01	.47	.99	.64	.63
84	" " "	3,500	1,050,000	9.10	.911	.76-1/2	.65	1.28	.88	.87
103	" " "	2,400	900,000	19.61	1.961	2.02	.85	1.76	1.16	1.14
213	Western Districts to W.T.L.	6,000	300,000	7.09	.615	1.51	1.13	2.22	1.60	1.51
218	" " "	6,000	300,000	6.93	.601	1.51	1.14	2.25	1.63	1.54
279	Illinois, Indiana & Western Ky. to C.F.A.	9,500	2,000,000	5.66	.566	1.58	1.38	2.44	1.79	1.79
307	" " "	7,000	3,300,000	4.90	.490	1.50-½	1.26	2.36	1.73	1.70
356	" " "	10,000	1,200,000	5.60	.560	1.99-½	1.60	2.91	2.16	2.16
377	" " "	10,000	1,200,000	5.68	.569	2.14-½	1.68	3.04	2.26	2.26
443	" " "	11,500	1,000,000	6.77	.677	3.00	1.94	3.51	2.61	2.62
496	" " "	9,500	1,000,000	6.05	.605	3.00	2.31	4.26	3.09	3.11
595	Western districts to W.T.L.	105 cars	1,600,000	5.21	.521	3.10	2.83	5.14	3.73	3.78
698	" " "	9,500	1,100,000	4.40	.438	3.06	3.14	5.63	4.14	4.21
765	" " "	9,000	800,000	4.10	.405	3.10	3.32	6.09	4.42	4.45
869	Northern Appalachian to New England Territory	9,000	900,000	5.80	.577	5.02	4.32	7.41	5.68	5.65

TABLE 60A

Rate-to-Cost Ratios for Trainload Movements in Shipper's Equipment with Annual-Volume Requirements

Distance (Actual Miles)	Territory	Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to Fully Allocated Costs		
			Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
33	Illinois, Indiana & Western Ky. to C.F.A.	215%	102%	158%	160%
84	" " "	118	60	87	88
103	" " "	238	115	174	177
213	Western Districts to W.T.L.	134	68	94	100
218	" " "	133	67	93	98
279	Illinois, Indiana & Western Ky. to C.F.A.	119	65	88	88
307	" " "	119	64	87	88
356	" " "	125	69	92	92
377	" " "	128	70	95	95
443	" " "	155	86	115	115
496	" " "	130	70	97	97
595	Western Districts to W.T.L.	110	60	83	82
698	" " "	98	54	74	73
765	" " "	93	51	70	70
869	Northern Appalachian to New England Territory	116	68	88	89

TABLE 60B

Frequency Distribution of Rate-to-Cost Ratios for Trainload Movements in Shipper's Equipment with Annual-Volume Requirements

Ratio Range (%) (1)	Number of Rate-to-Cost Ratios			
	Rate to Variable Costs	Rate-to-Fully-Allocated Costs		
		Ton & Ton-Mile	Car & Car-Mile	Dollar Basis
	(2)	(3)	(4)	(5)
Below 95	1	13	10	8
95 - 99	1	0	2	3
100 - 109	0	1	0	1
110 - 119	5	1	1	1
120 - 129	2	0	0	0
130 - 139	3	0	0	0
140 - 149	0	0	0	0
150 - 159	1	0	1	0
160 - 169	0	0	0	1
170 - 179	0	0	1	1
180 & over	2	0	0	0
TOTAL:	15	15	15	15

Of the numerous single-car rates shown in Tables 53 and 54, only 24 fail to cover adjusted regional average variable costs furnished by the Commission's cost and valuation section. Six of these 24 rates are subject to annual volume requirements. Movements under annual-volume single-car rates frequently move in multiple-car service. In such instances the costs would be substantially overstated. With isolated exceptions, single-car rates maintained by the railroads are compensatory and do not appear to be unreasonably high in relation to such costs.

Of the many multiple-car rates shown in Tables 55 and 56, only 6 are below the adjusted regional average variable costs furnished by the Commission's cost and valuation section. As stated, the variable costs have been updated to a 1973 level, and the rates shown are those in effect on September 1, 1973. The multiple-car rates appear to be compensatory and not unreasonably high in relation to such costs.

Of the trainload rates shown in Tables 57 to 60, inclusive, only 11 fail to cover the adjusted regional average variable costs.

As shown in Tables 61 and 62, *infra,* many factors enter into the costs of moving coal in trainloads which affect the costs. The fact that some of the trainload rates fail to cover regional average variable costs furnished by the Section of Cost and Valuation does not mean that they are necessarily noncompensatory. Considering all of the cost evidence including that presented in Tables 61 and 62, *infra,* it appears that, except for isolated instances, the trainload rates maintained by the railroads are compensatory.

As noted earlier, fully allocated costs, with constant costs being distributed on three bases, are also shown in Tables 53 through 60. As could be expected, the ton and ton-mile basis of allocating constant costs assigns a relatively larger portion of constant costs to the various movements; and, therefore, there is a relatively larger number of rate-to-fully allocated cost-ratios below 100 percent on the ton and ton-mile basis than for the other two bases. For example, considering the 129 single-car movements shown in Tables 53 and 54, there were 83 movements having rate-to-fully-allocated cost-ratios of less than 100 percent, while under the other two bases there were 46 and 62 movements, respectively, having ratios below 100 percent.

For the 64 multiple-car movements shown in Tables 55 and 56, 42 of these movements had rate-to-fully allocated cost-ratios of less than 100 percent, while under the other two bases there were 24 and 28 movements, respectively, having ratios below 100 percent.

The same situation holds true with respect to the trainload movements in carrier's equipment shown in Tables 57 and 58. There, under the ton and ton-mile method, of the 97 trainload movements shown 74 had rate-to-fully allocated cost-ratios of less than 100 percent, while under the car and car-mile and dollar bases there were 43 and 36 movements, respectively, having ratios less than 100 percent. Of the 28 trainload movements in shipper's equipment, Tables 59 and 60, under the ton and ton-mile basis 25 movements had a rate-to-fully allocated cost-ratio of less than 100 percent, while under the car and car-mile and dollar bases there were 16 and 14 movements, respectively, having ratios less than 100 percent.

Viewed in another way, of the 129 single-car movements shown in Tables 53 and 54, 64 percent failed to cover the fully allocated costs using the ton and ton-mile method of allocating constant cost, while 36 percent and 48 percent of the rates failed to cover the fully allocated costs using the car and car-mile and dollar bases of allocating constant costs, respectively. Similarly, for the 64 multiple-car movements shown in Tables 55 and 56, 66 percent of the rates failed to cover fully allocated costs under the ton and ton-mile method, whereas under the car and car-mile and dollar methods the comparable percents were 38 percent and 44 percent, respectively. Furthermore, for the 97 trainload movements in carrier's equipment shown in Tables 57 and 58, 76 percent of the rates failed to cover fully allocated costs under the ton and ton-mile method, whereas under the car and car-mile and dollar methods the comparable percents were 44 and 37, respectively. For the 28 trainload movements in shipper's equipment, Tables 59 and 60, 89 percent of the rates failed to cover fully allocated costs under the ton and ton-mile method, 57 percent under the car and car-mile basis, and 50 percent under the dollar basis.

The railroads transported 12,981,717 tons of coal in 1973 to Armco, Inland, and Republic for which they received $51,657,493. Based on variable unit costs shown above, the total variable costs were $32,069,894, or a revenue-cost ratio of 161 percent. In adjustments shown in a surrebuttal statement of the steel companies, the revenue-cost ratio is stated to be 176 percent as of April 1, 1974.

The railroads transported 23,248,024 tons of coal in 1973 to Carolina Power and Light Company, Duke Power Company, South Carolina Electric and Gas Company, and Virginia Electric and Power Company, for which they received $88,626,526. Based on variable unit costs shown above, the total variable costs amounted to $59,013,779, or a revenue-cost ratio of 150 percent. In adjustments shown in a surrebuttal statement of the above electric power companies, the revenue-cost ratio is stated to be 162 percent as of April 1, 1974.

27. *Relationship of Rates on Bituminous Coal to Class-100 Rates*

Bituminous coal is rated class 17-1/2 (approximately 17.5 percent of class 100) in the Uniform Freight Classification maintained by the railroads. Extremely little, if any, bituminous coal moves at class rates.

In Table 63 below are shown the percentages fine coal rates are of class-100 rates as of July 10, 1958 and as of August 19, 1973 from major producing points to major consuming points within the Southeast.

TABLE 61

*Rail Unit Cost Applicable to Movements of Coal in Open Hopper Cars to Plants of Armco, Inland and Republic. Costs Based on Operations in 1973 (Individual Railroads) or 1971 Adjusted to 1973 Wage & Price Levels (Region II)**

Railroad Or Region[1]	Type of Movement (Unit Train or Other Than Unit Train)	Terminal Cost Per Carload		Line-Haul Cost		Interchange Cost Per Loaded Car (Per Handling)
		Origin	Destination	Per-Car Mile	Per-Ton Mile	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
C.& O.	Other than U.T.	$24.70	$27.44	19.64306¢	.23882¢	$ 6.77
I.C.G.	9500-Ton Unit Train[3]	9.45	[2]16.79	12.88602	.20079	2.94
L. & N.	Other than U.T.	27.87	N.A.	20.48048	.23297	7.42
N. & W.	7200-Ton Train	32.37	N.A.	21.35650	.18530	9.10
N. & W.	Other than U.T.	32.37	33.72	22.36339	.23509	8.76
Region II	7200-Ton Train	34.51	35.02	26.33128	.23898	10.48
Region II	Other than U.T.	34.51	35.02	26.92239	.30558	9.80

[1] Individual railroad costs developed from Rail Form A applications for year 1973, adjusted to reflect operating characteristics pertaining to coal. Costs for Region II, Official Territory Excluding New England, from 1971 Cost Scales prepared by the Cost and Valuation Section of the Interstate Commerce Commission.

[2] Costs for Region II used at destination for 9500-ton unit trains.

[3] 9500-ton unit train costs exclude car ownership costs (cars provided by Inland Steel).

*Source: Verified Statement of Eugene F. Bilz, Table 3.

TABLE 62

*Rail Variable Unit Costs Applicable to Movements of Bituminous Coal to Plants of C.P.&L., Duke, S.C.E.&G. and VEPCO. Costs Based on Operations in 1973 (Individual Railroads) or 1971 Adjusted to 1973 Wage and Price Levels (Southern Region - Reg. IV)**

Railroad Or Region[1]	Terminal Cost Per Carload		Line-Haul Cost		Interchange Cost Per Loaded Car (Per Handling)
	Origin	Destination	Per-Car Mile	Per-Ton-Mile	
(1)	(2)	(3)	(4)	(5)	(6)
C. & O.	$24.72	$18.19	19.643064¢	.23882¢	$6.77
Clinchfield	16.91	13.03	15.53380	.19644	3.20
L. & N.	27.88	N.A.	20.48046	.23297	7.42
N. & W.	32.38	22.53	22.36339	.23509	8.78
S. C. L.	N.A.	17.40	20.57038	.25029	6.55
Sou.Ry.Co.Unit Train[2]					
96-Car Train	11.74	12.18	15.39192	.21855	N.A.
60-Car Train	11.74	12.18	17.26910	.15849	N.A.
Southern Region (Reg. IV)	25.27	18.22	20.11341	.26374	6.44

[1] Individual railroad costs are developed from Rail Form A applications for year 1973, adjusted to reflect operating characteristics pertaining to coal. Costs for Southern Region (Region IV) are from 1972 Cost Scales prepared by the Cost and Valuation Section of the I.C.C.

[2] Costs for Southern Ry. Co. cannot be developed for 1973 because of inadequate data reported by the Southern (QCS reports on a system basis, etc.). Costs for Region IV are imputed to the Southern Ry. Co.

*Source: Verified Statement of Eugene F. Bilz, Table 3.

TABLE 63

Percentages Fine Coal Rates Are of Class-100 Rates

From	To	28300 Distance	Percent Fine Coal Rate of Class 100 as of 7/10/58	Percent Fine Coal Rate of Class 100 as of 8/19/73
Lake City, Tenn.	Skyland, N.C.	159	8.4	6.4
Dante, Va.	Canadys, S.C.	472	6.7	3.8
Lake City, Tenn.	Goldsboro, N.C.	477	7.1	5.4
Lake City, Tenn.	Lumberton, N.C.	421	7.2	5.5
Lake City, Tenn.	Moncure, N.C.	408	7.0	5.3
Lake City, Tenn.	Spencer, N.C.	299	7.7	6.3
Appalachia, Va.	Belmont, N.C.	262	7.6	3.9
Lake City, Tenn.	Spray, N.C.	404	7.4	6.0
Dante, Va.	Pelzer, S.C.	290	7.5	4.7
Lake City, Tenn.	Robinson, S.C.	397	7.5	5.6
Lake City, Tenn.	Wilmington, N.C.	488	6.8	5.1
Dante, Va.	Brice, N.C.	226	8.0	3.1
Dante, Va.	Riverbend, N.C.	298	7.5	4.3
Appalachia, Va.	Catawba, N.C.	217	8.6	3.3
Pocahontas, Va.	Walnut Cove, N.C.	206	9.3	4.2
Dante, Va.	North Wateree, S.C.	393	7.1	4.2
Dante, Va.	Irmo, S.C.	350	7.1	4.4
Lake City, Tenn.	Augusta, Ga.	352	7.6	5.7
Harris, W.Va.	Hyco, N.C.	284	7.8	3.8
Anjean, W.Va.	Bremo, Va.	275	8.3	6.7
Anjean, W.Va.	Richmond, Va.	321	8.1	6.0
Anjean, W.Va.	Amoco, Va.	369	8.1	6.1
			Average 7.7%	Average 5.0%

Figures H through AA show the relationship of single-car, multiple-car, and trainload rates furnished by the carriers in this proceeding to Docket No. 28300 class rate scale. The figures show that the upper limit of these rates applicable in carrier-owned equipment is about 9 percent of class 100 and the lower limits approximate 3 percent of class 100. In general, as the figures show, the upper limit applies on unconditional single-car rates and the lower limit applies on trainload rates subject to annual-volume requirements. It is clear from the record that intense competition (interfuel, intermodal, and interregional) has compelled considerable deviation from distance-oriented pricing of rail services. Nonetheless it will be observed from the figures that there is a fairly narrow range in relation to Docket No. 23800 distance-oriented class rates on particular types of rates, i.e., single-car, multiple-car, trainload (carrier equipment) and trainload (shipper-owned cars). Since the percentage of class 100 for any rate on bituminous coal can be simply computed, it can be easily determined whether a particular rate or rates published by a carrier conform to and fall within the usual pattern.

FIGURE H

SINGLE CAR RATES FROM AND TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

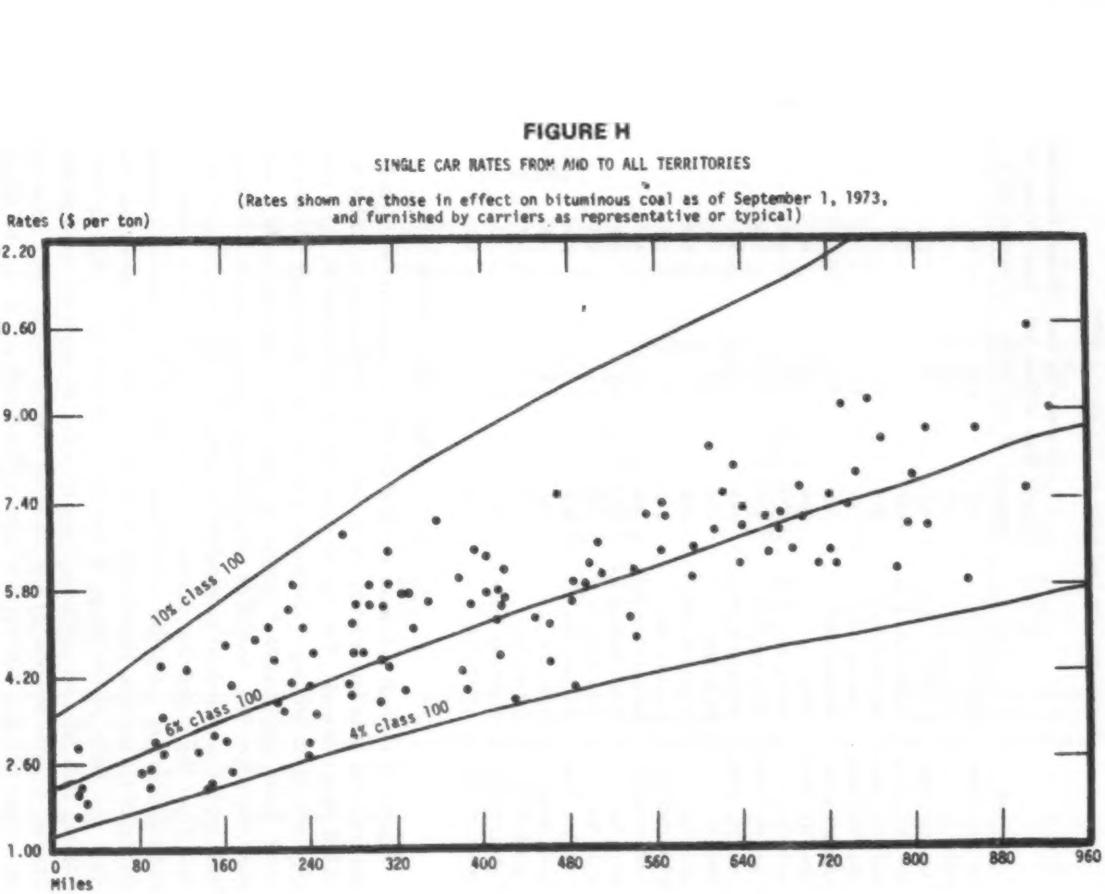

FIGURE I

SINGLE CAR RATES ON EXPORT, LAKE CARGO, AND RIVER TRAFFIC FROM APPALACHIAN AND ILLINOIS-INDIANA-W. KENTUCKY REGIONS

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

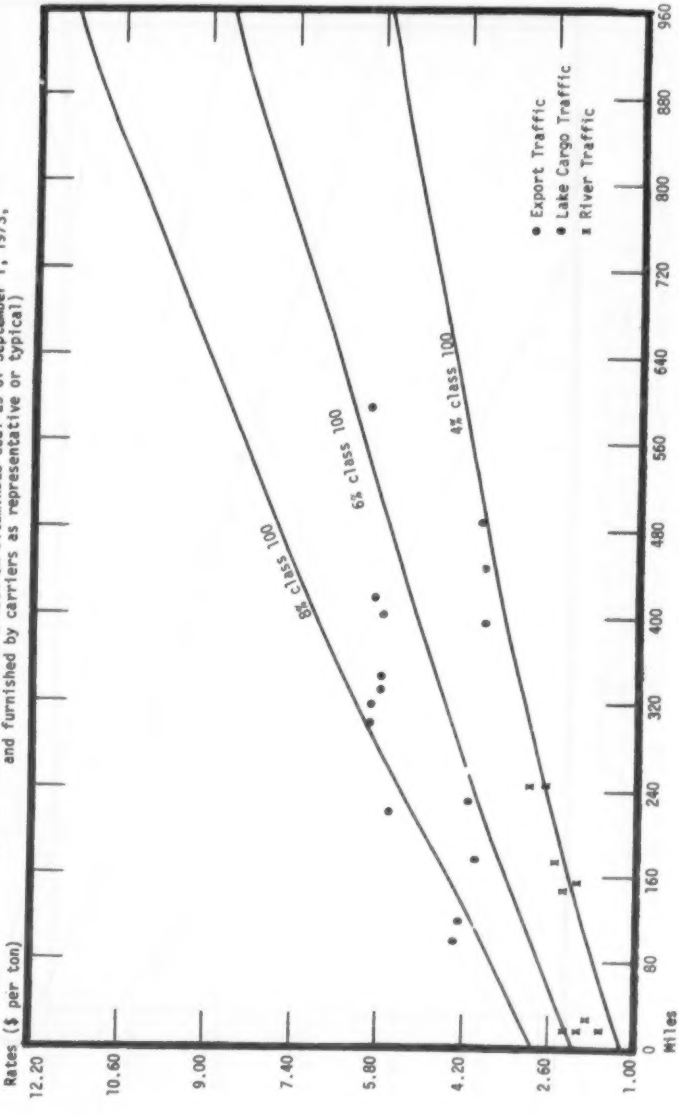

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FIGURE J

SINGLE CAR RATES FROM ILLINOIS-INDIANA, W. KENTUCKY AND APPALACHIAN REGIONS TO SOUTHEAST

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

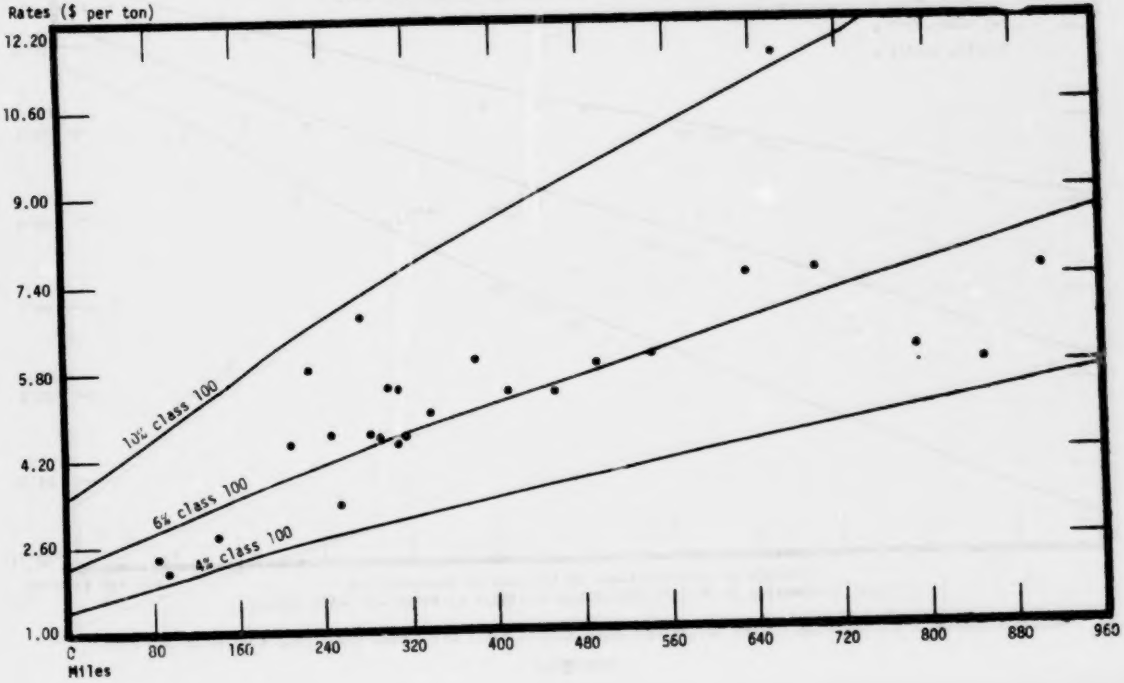

FIGURE K

SINGLE CAR RATES FROM APPALACHIAN REGION, EXCLUDING EXPORT, LAKE CARGO, AND RIVER TRAFFIC,
TO ALL TERRITORIES EXCEPT TO THE SOUTHEAST

(Rates shown are those in effect on bituminous coal as of September 1, 1973,
and furnished by carriers as representative or typical)

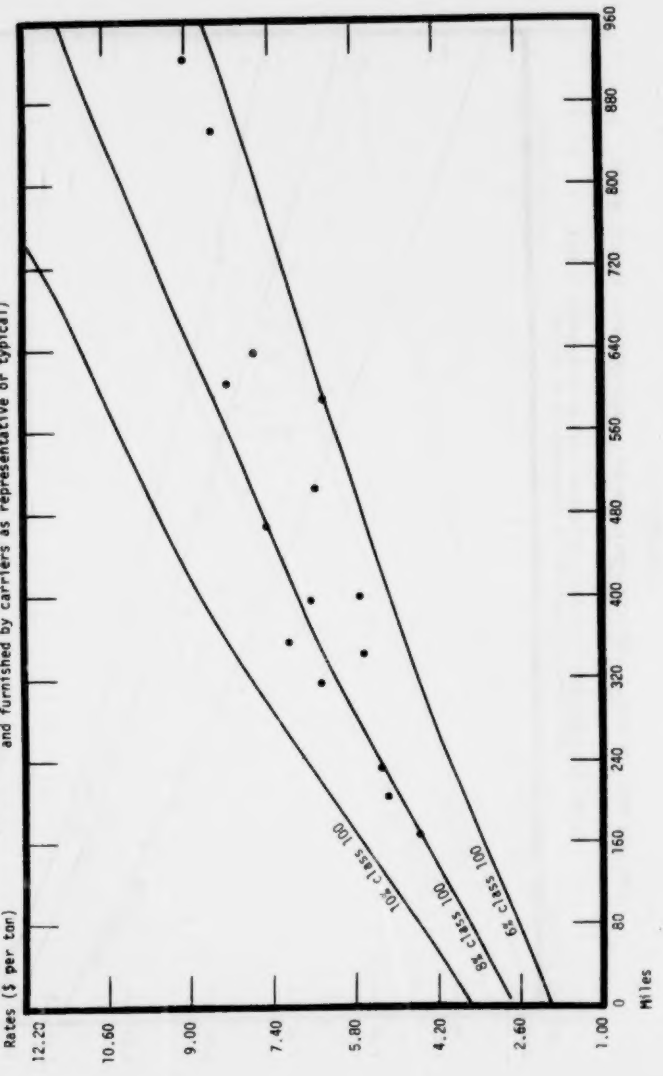

FIGURE L

SINGLE CAR RATES--ON LINE DELIVERY FROM APPALACHIAN AND ILLINOIS-INDIANA-W. KENTUCKY REGIONS TO ALL TERRITORIES EXCEPT TO THE SOUTHEAST

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

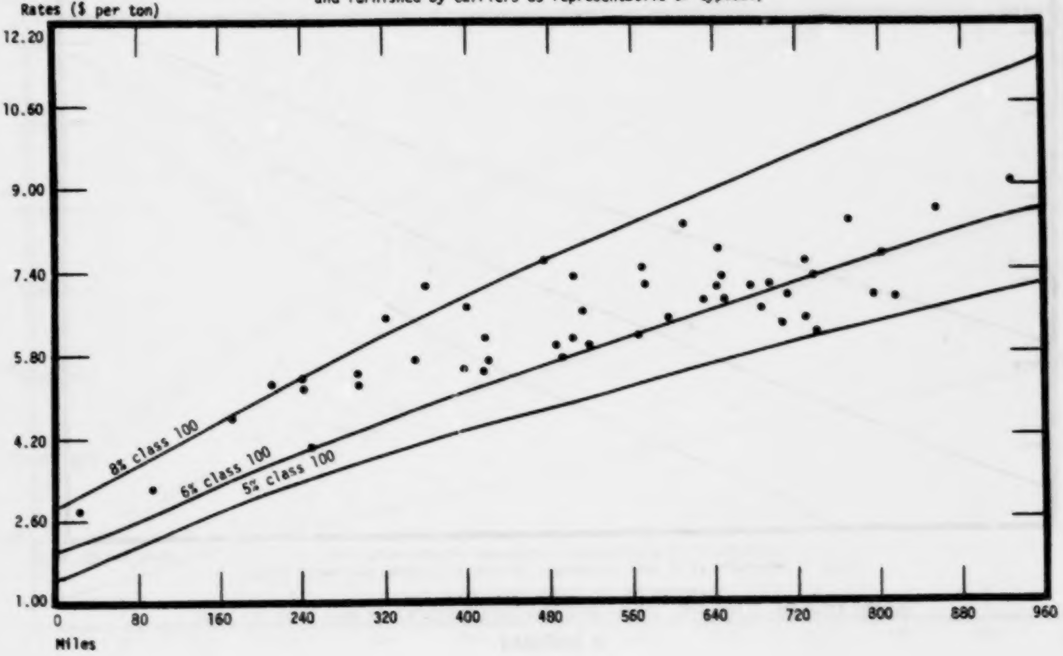

FIGURE M

SINGLE CAR RATES FROM ILLINOIS-INDIANA-W. KENTUCKY REGION TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

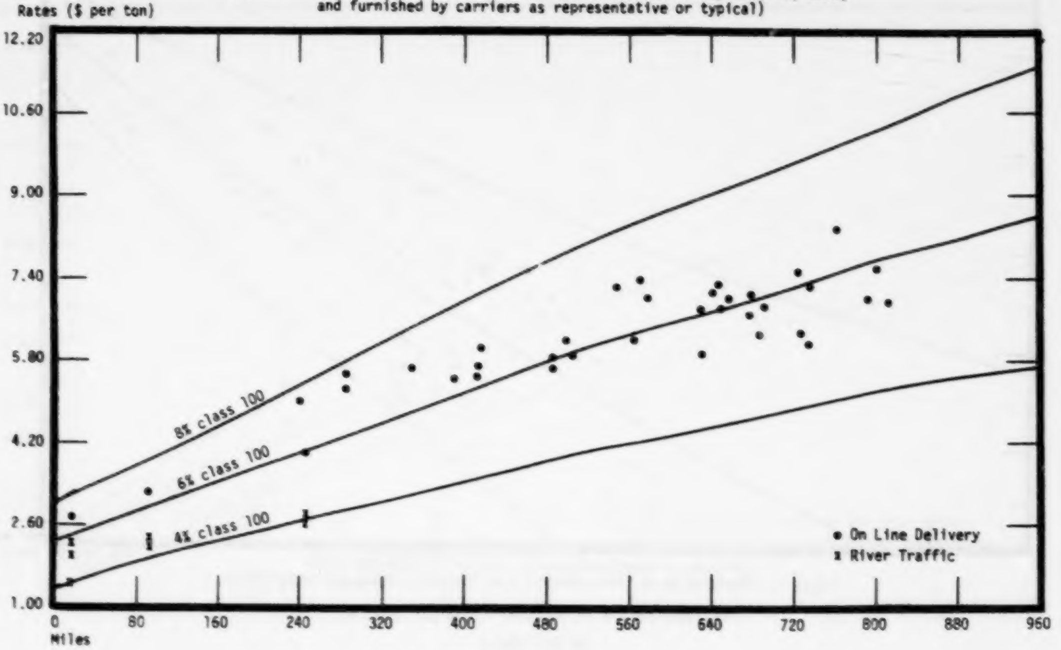

FIGURE N

MULTIPLE CAR RATES--FROM AND TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

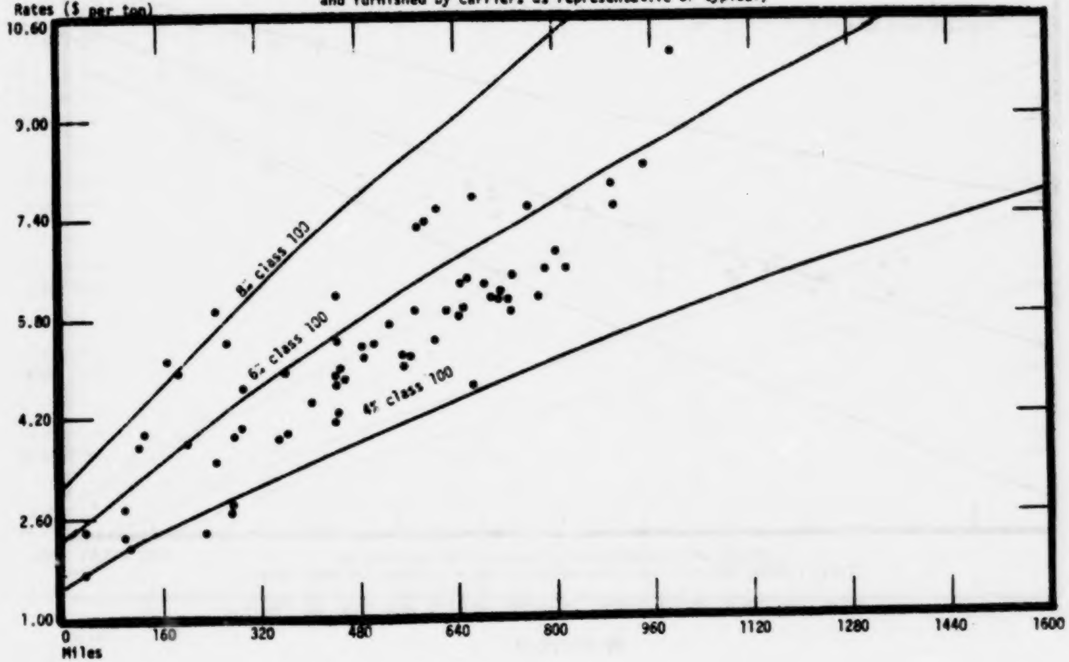

FIGURE O

MULTIPLE CAR RATES--ON LINE DELIVERY FROM ILLINOIS-INDIANA-W. KENTUCKY REGION TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

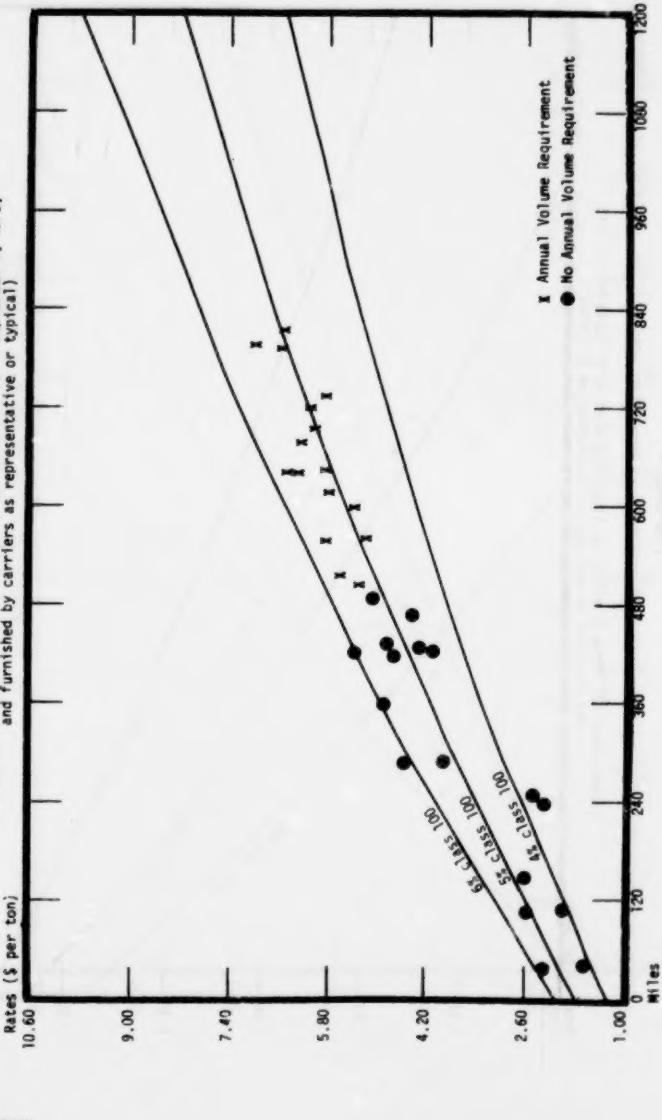

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FIGURE P

TYPICAL OR REPRESENTATIVE MULTIPLE CARLOAD RATES--ON LINE DELIVERY FROM POINTS WEST OF MISSISSIPPI RIVER TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

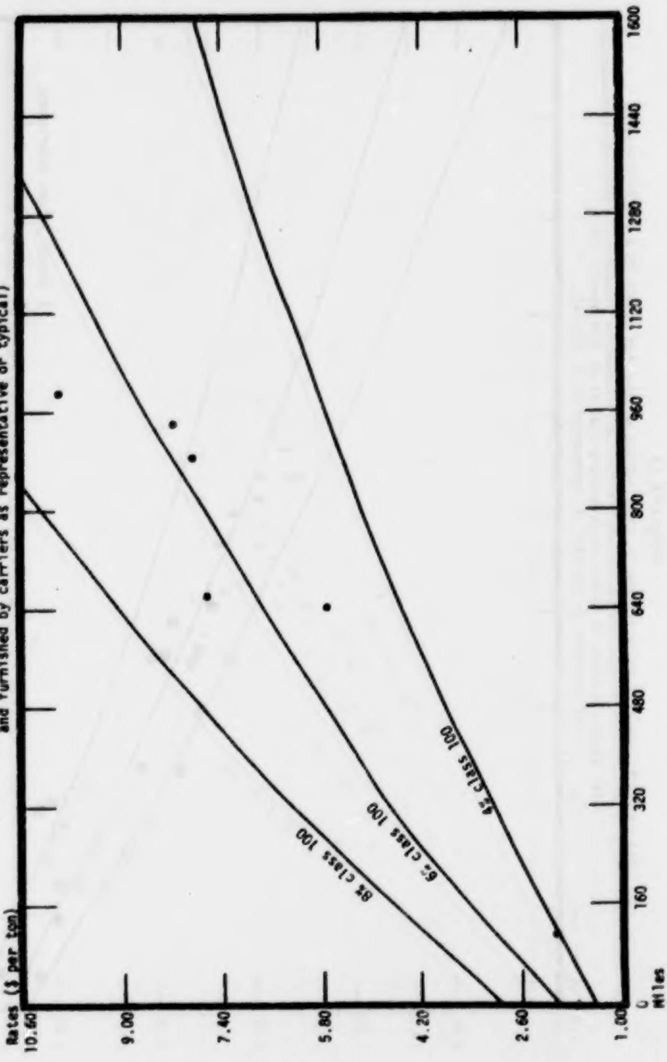


FIGURE Q

MULTIPLE CAR RATES--ON LINE DELIVERY FROM ILLINOIS-INDIANA-W. KENTUCKY AND APPALACHIAN REGIONS TO SOUTHEAST

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

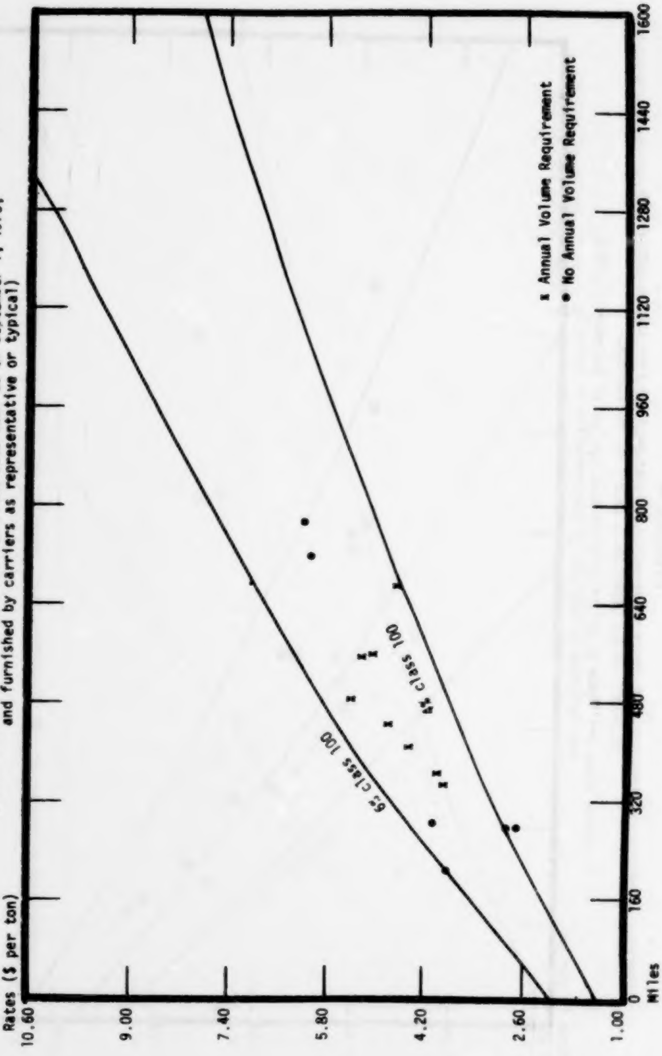


FIGURE R

TYPICAL OR REPRESENTATIVE MULTIPLE CAR RATES--ON LINE DELIVERY FROM APPALACHIAN REGION TO POINTS IN ALL TERRITORIES EXCEPT TO THE SOUTHEAST

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

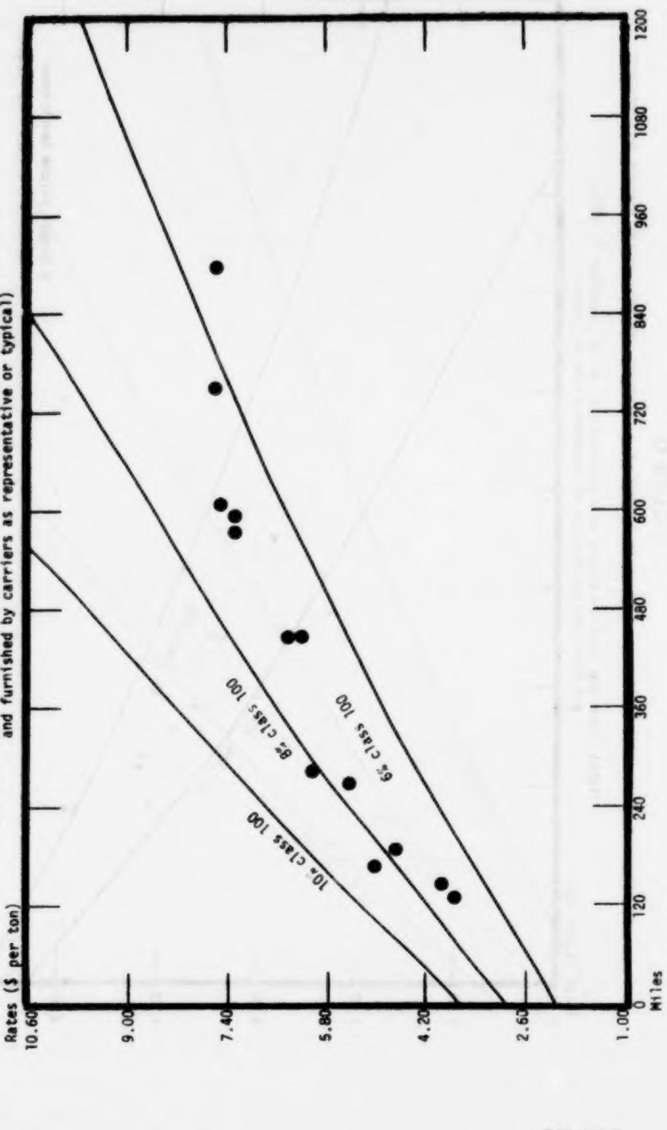


FIGURE S

TRAINLOAD RATES ON LAKE CARGO TRAFFIC--CARRIERS' EQUIPMENT FROM APPALACHIAN REGION TO LAKE PORTS

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

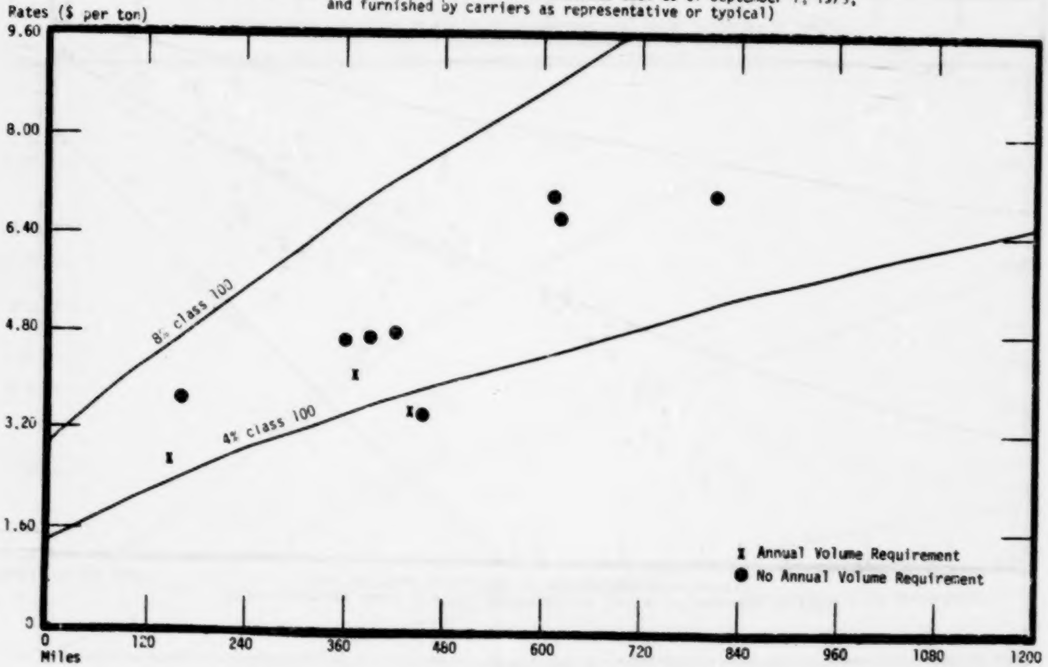


FIGURE T

TRAINLOAD RATES--CARRIERS' EQUIPMENT FROM AND TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

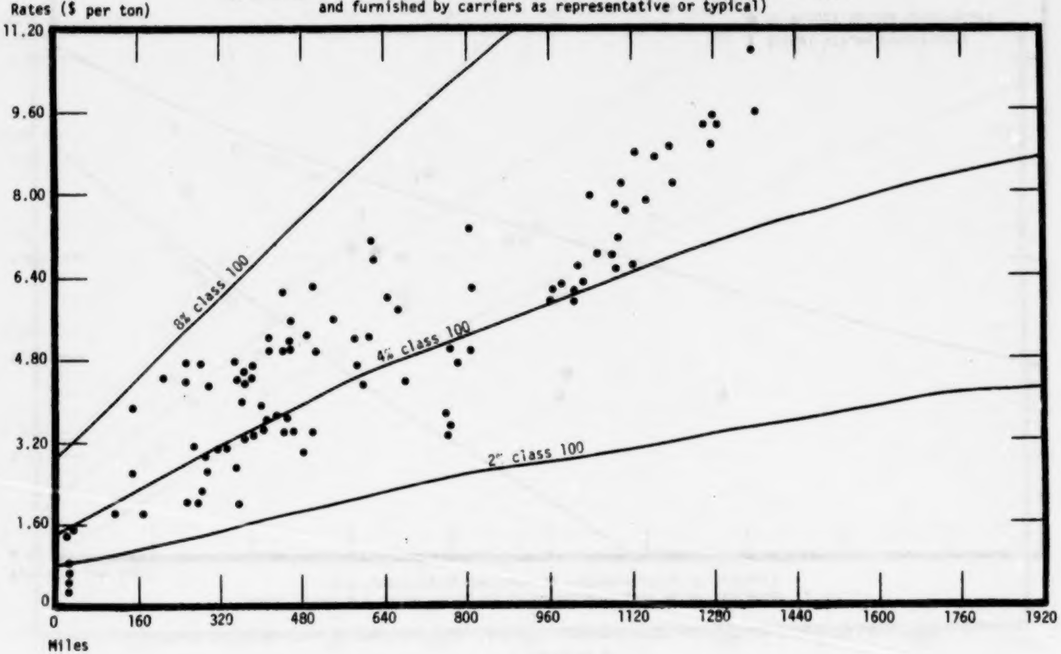


FIGURE U

TRAINLOAD RATES--CARRIERS' EQUIPMENT FROM WEST OF MISSISSIPPI RIVER TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

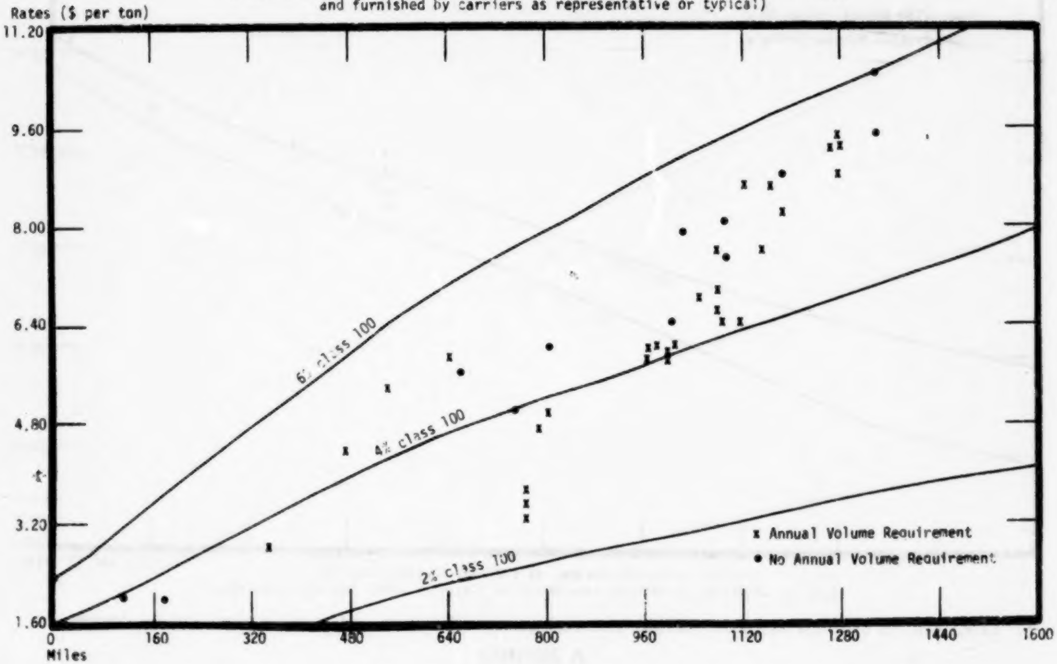


FIGURE V

TRAINLOAD RATES--CARRIERS' EQUIPMENT--ON LINE DELIVERY. FROM ILLINOIS-INDIANA-W. KENTUCKY REGION TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

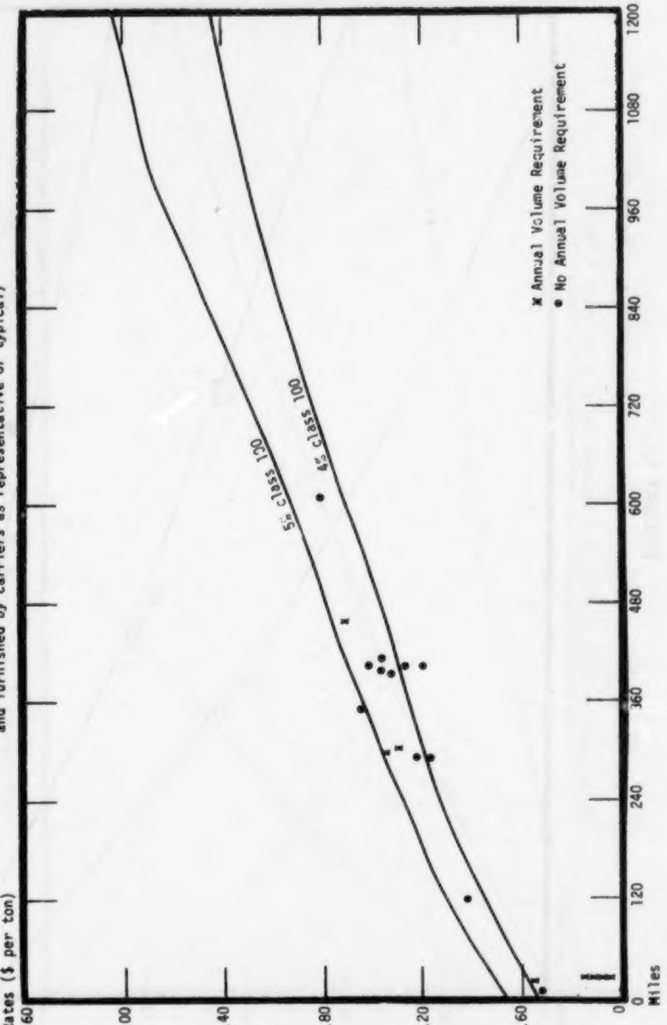


FIGURE W

TRAINLOAD ANNUAL VOLUME RATES--CARRIERS' EQUIPMENT FROM APPALACHIAN AND ILLINOIS-INDIANA-W. KENTUCKY REGION TO SOUTHEAST

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

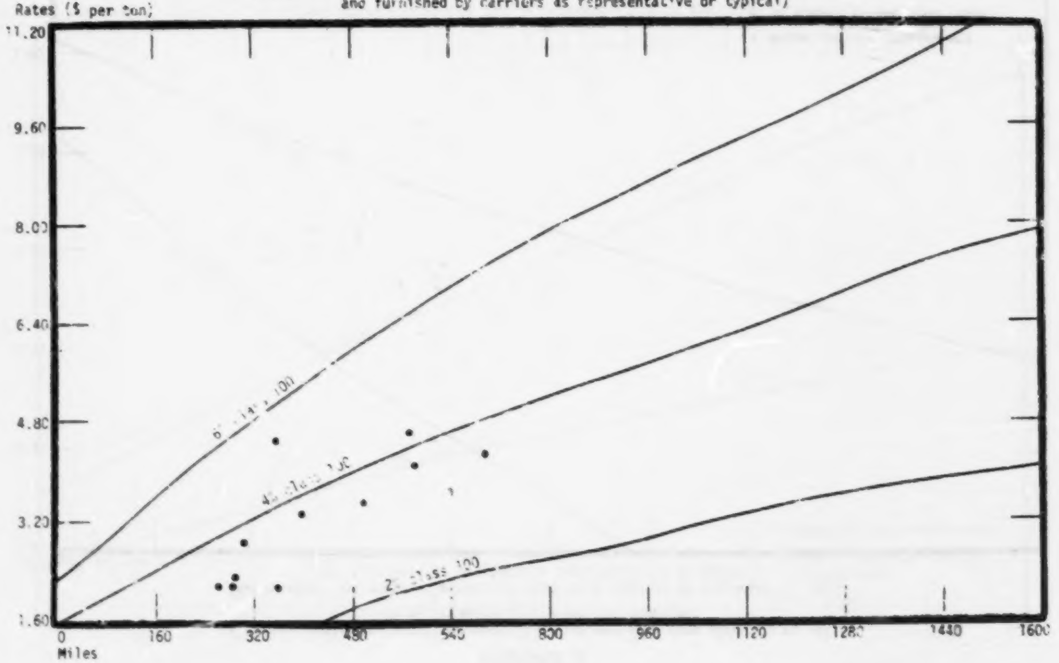


FIGURE X

TRAINLOAD RATES--CARRIERS' EQUIPMENT--ON LINE DELIVERY FROM APPALACHIAN REGION TO ALL TERRITORIES EXCEPT THE SOUTHEAST

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

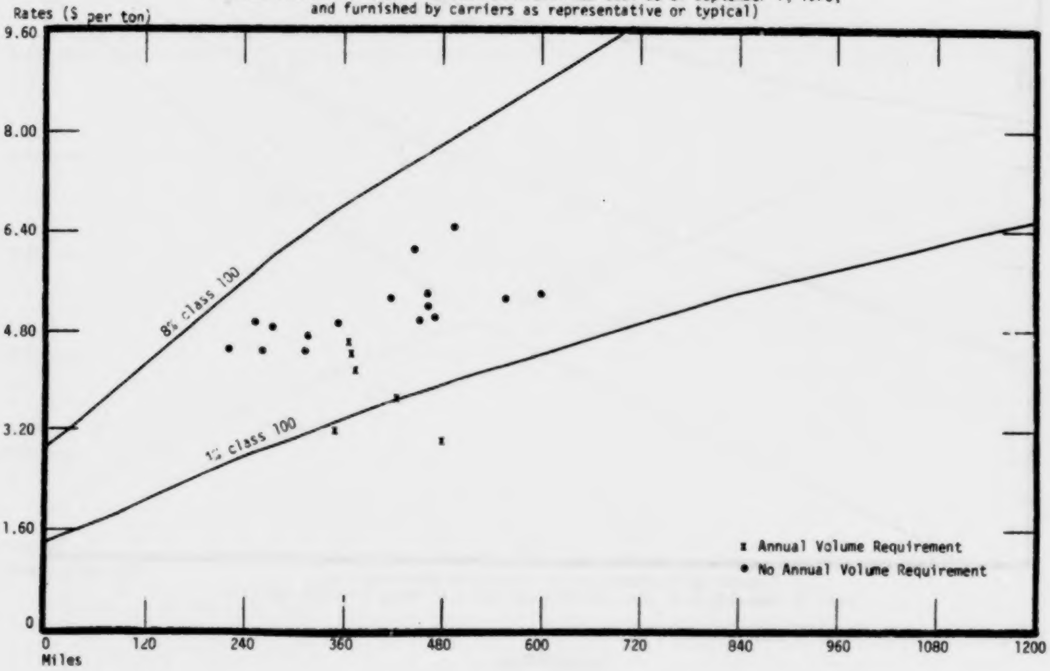


FIGURE Y

TRAINLOAD RATES--SHIPPER'S EQUIPMENT FROM ILLINOIS-INDIANA-W. KENTUCKY REGION TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

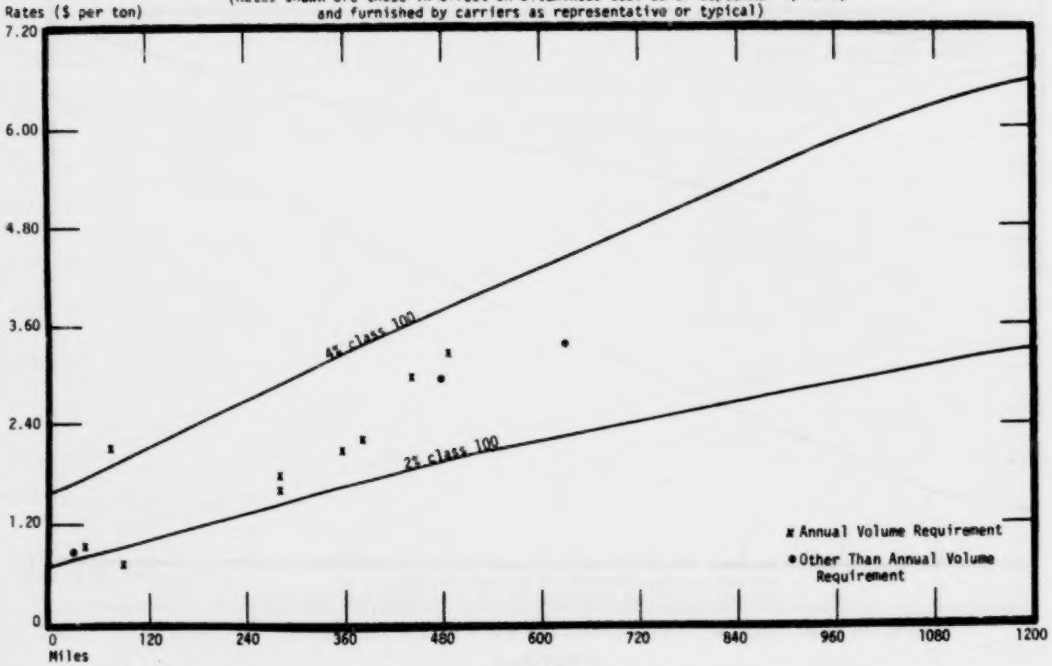


FIGURE Z

TRAINLOAD RATES--SHIPPER'S EQUIPMENT FROM APPALACHIAN REGION TO ALL TERRITORIES EXCEPT THE SOUTHEAST

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)

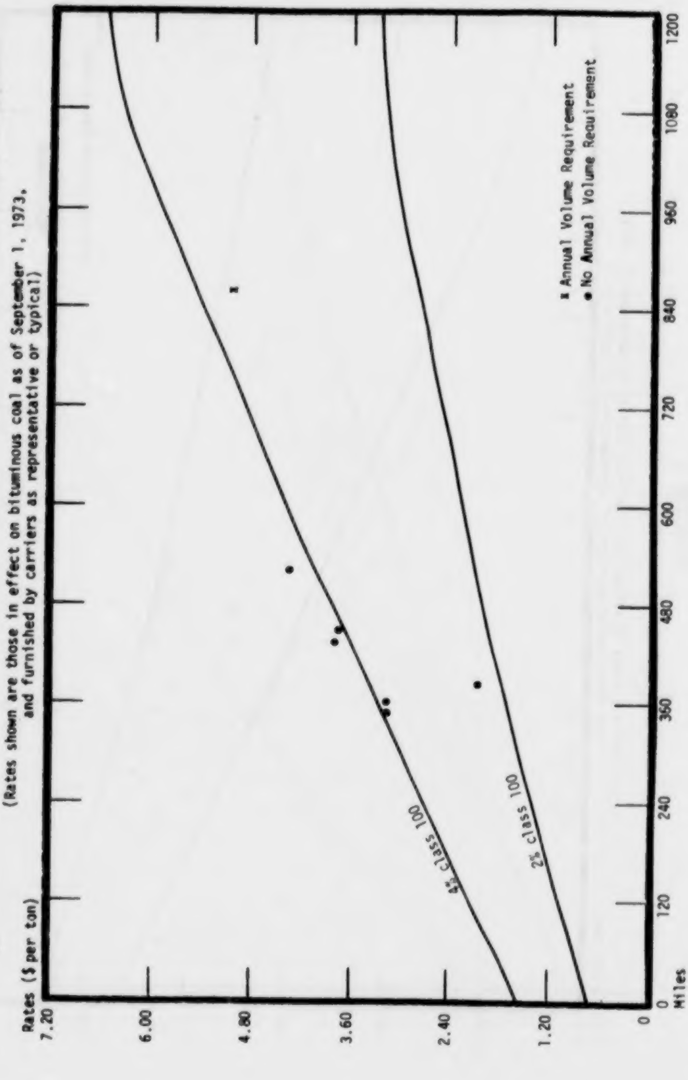
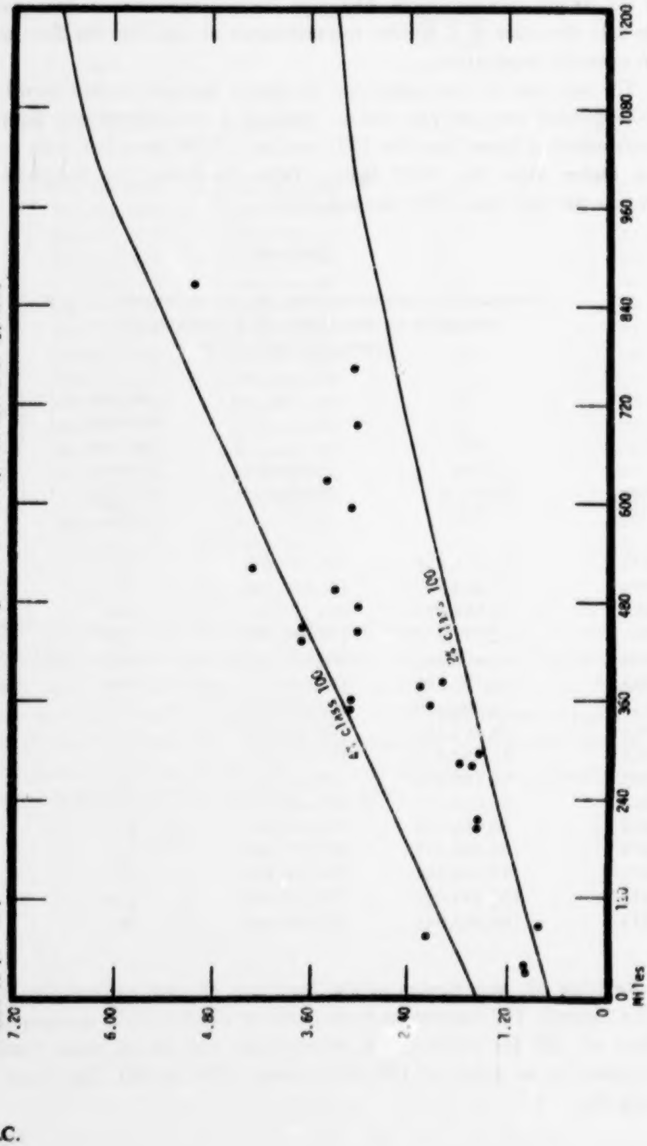


FIGURE AA

TYPICAL OR REPRESENTATIVE TRAINLOAD RATES--SHIPPER'S EQUIPMENT FROM AND TO ALL TERRITORIES

(Rates shown are those in effect on bituminous coal as of September 1, 1973, and furnished by carriers as representative or typical)



28. *Other Measurements of the Freight Rate Structures*

The Southern District railroads submitted evidence of other measurements of the freight rate structure. Although these measurements deal mainly with the rate structure as it applies to movements of coal into the Southeast, they have general application.

The net tons of coal originated by class I railroads in Southern District in 1973 divided into revenue dollars produce a revenue per ton figure of 265 cents which is lower than the 1972 amount of 270 cents and only 2 cents per ton higher than the 1958 figure. Table 64 shows the Southern District revenue per ton from 1958 through 1973.

Table 64

Comparison of average revenue per ton on bituminous coal originated by class I railroads in southern district years 1958 thru 1973

Year (1)	Net Tons Originated (2)	Revenue (Dollars) (3)	Average Revenue Per-Ton (Cents) (3)÷(2) (4)	Index (5)
1958	65,351,958	171,767,607	263	100.0
1959	62,269,927	163,883,949	263	100.0
1960	62,844,243	161,172,017	256	97.3
1961	62,573,529	158,884,385	253	96.2
1962	65,410,561	163,062,691	249	94.7
1963	69,782,698	176,145,209	252	95.8
1964	70,906,228	175,339,467	247	93.9
1965	74,660,252	179,742,589	241	91.6
1966	81,152,435	191,142,467	236	89.7
1967	89,148,476	200,171,337	225	85.5
1968	86,165,529	195,046,202	226	85.9
1969	90,084,428	219,403,961	244	92.8
1970	100,389,227	263,837,005	263	100.0
1971	97,429,564	270,209,654	277	105.3
1972	102,903,661	278,313,473	270	102.7
1973	106,863,041	283,369,965	265	100.8

Revenue per ton figures of the Southern District carriers for coal from 1958 through 1973 increased to an index of 100.8 in 1973 compared with an index of 100 for 1958, while revenue per ton on all other commodities increased to an index of 136 when using 1954 as 100. This is set forth in Table 65.

TABLE 65

Net tons originated and revenue dollars for all traffic other than coal - southern district lines

Year (1)	Net Tons Originated (2)	Revenue (Dollars) (3)	Revenue Per-Ton For Tons Originated (Per Ton) (4)	Index (5)
1958	172,254,750	1,019,015,700	5.92	100
1959	188,909,160	1,071,604,800	5.67	96
1960	186,847,360	1,023,195,100	5.48	93
1961	184,886,890	1,020,612,900	5.52	93
1962	193,693,540	1,080,764,400	5.58	94
1963	201,985,540	1,104,187,900	5.47	93
1964	214,624,330	1,165,776,000	5.43	92
1965	222,568,530	1,221,117,000	5.49	93
1966	232,098,310	1,294,550,400	5.58	94
1967	239,522,630	1,316,986,800	5.50	93
1968	243,891,750	1,435,181,400	5.88	99
1969	250,499,600	1,566,008,800	6.25	106
1970	250,627,370	1,672,444,000	6.67	113
1971	250,666,830	1,854,260,600	7.39	125
1972	264,489,240	2,000,715,000	7.56	128
1973	273,355,170	2,198,120,400	8.04	136

From 1958 through 1972 the revenue per net ton on coal for account of the Southern District Lines decreased 30 percent when measured in constant dollars rather than actual dollars. This trend continued during 1973 and revenues per ton decreased 35 percent from 1958. The revenue per ton received on all traffic other than coal, when measured in constant dollars, decreased 12 percent from the 1958 level. In Table 66 are shown revenues per ton in constant dollars from year 1958 through 1973.

TABLE 66

Revenues per ton in constant dollars

	All Traffic Other Than Coal				Coal		
Year	Rev. Per Ton	GNP Adjusted Index	Restated Rate	1958 = Index 100	Rev. Per Ton	Restated Rate	1958 = Index 100
1958	5.92	153.9	911	100	263	405	100
1959	5.67	151.5	859	94	263	398	98
1960	5.48	149.0	817	90	256	381	94
1961	5.52	147.1	812	89	253	372	92
1962	5.58	145.5	812	89	249	362	89
1963	5.47	143.6	785	86	252	362	89
1964	5.43	141.5	768	84	247	349	86
1965	5.49	138.8	762	84	241	335	83
1966	5.58	135.1	754	83	236	319	79
1967	5.50	130.9	720	79	225	295	73
1968	5.88	125.8	740	81	226	285	70
1969	6.25	120.0	750	82	244	293	72
1970	6.67	113.8	759	83	263	299	74
1971	7.39	108.7	803	88	277	301	74
1972	7.56	105.3	796	87	270	284	70
1973	8.04	100.0	804	88	265	265	65

Figure AB compares the 1961-1973 change in revenue per ton from coal of a major coal-carrying railroad in the Southern District with wholesale and consumer price indices.

The carload waybill statistics prepared by the Department of Transportation show data taken from a one-percent sampling of rail cars terminated in the year 1972. Table 67 summarizes this data at the one-percent level for bituminous coal and prepared bituminous coal. Prepared bituminous coal has been crushed or pulverized into a form suitable for use as fuel. The bulk of rail coal shipments is prepared bituminous coal. The statistics for bituminous coal include the statistics for both prepared and lump bituminous coal.

FIGURE A8

LOUISVILLE & NASHVILLE RAILROAD CO.
REVENUE PER TON

1961-1773
INDEX 1961 = 100/COAL

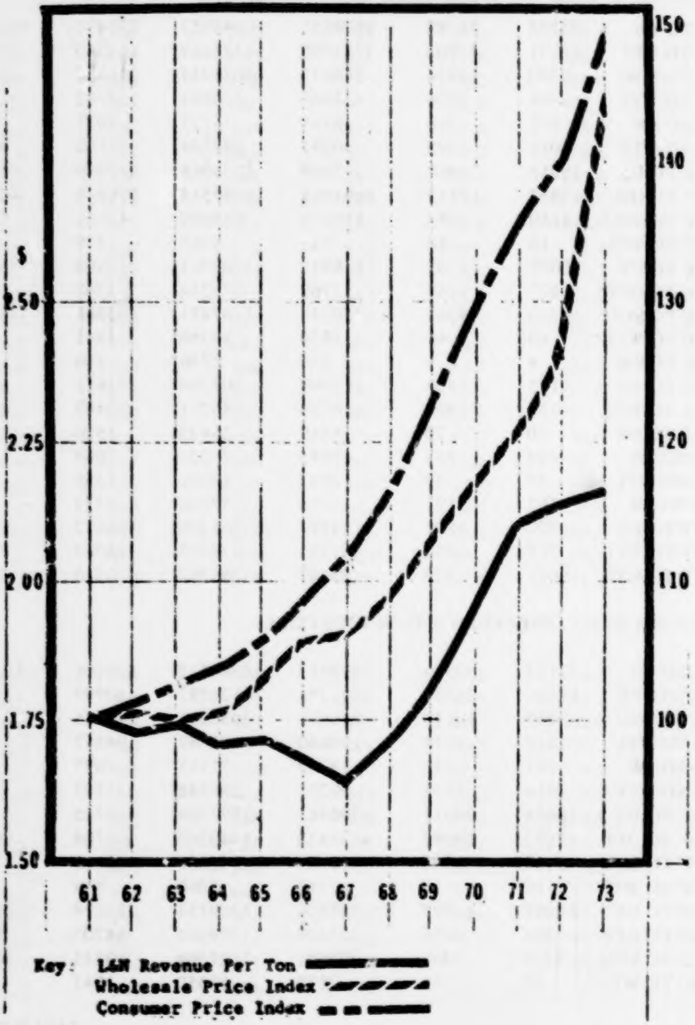


TABLE 67

STCC No. 1121 BITUMINOUS COAL

Territorial Movement	Sample Size	No. of Carloads	Weight (tons)	Revenue (dollars)	Ton Miles	Car Miles
					(in thousands)	
US TO US	32284	36188	2909551	10348952	830470	10295
US TO OFF	19671	21902	1761798	6128564	441243	5579
US TO SOU	9390	10714	840573	3056742	246466	3121
US TO WTL	2016	2328	198640	803887	104552	1143
US TO SW	191	216	18249	71171	7077	90
US TO MTP	1016	1028	90291	288588	31132	362
OFF TO US	19015	21068	1717019	5901966	419949	5196
OFF TO Off	17843	19713	1605964	5347514	376948	4673
OFF TO SOU	1160	1343	110174	546620	42163	511
OFF TO WTL	10	10	743	5360	479	6
SOU TO US	10097	11599	888918	3309321	270194	3539
SOU TO OFF	1827	2188	155769	779264	64207	904
SOU TO SOU	8226	9367	730043	2507471	203866	2605
SOU TO WTL	40	40	2850	20350	1941	27
SOU TO SW	4	4	256	2236	180	3
WTL TO US	1175	1430	112509	302708	24611	324
WTL TO WTL	1150	1405	110729	285271	22483	294
WTL TO SW	20	20	1418	16425	1526	22
SW TO US	207	232	19583	73627	7044	89
SW TO WTL	39	39	2943	19331	1586	21
SW TO SW	167	192	16575	52510	5371	66
MTP TO US	1790	1859	171522	761330	108672	1147
MTP TO WTL	777	834	81375	473575	78063	795
MTP TO MTP	1011	1023	89947	285305	30310	350

STCC NO. 11212 PREPARED BITUMINOUS COAL

US TO US	32132	36036	2898917	10344818	830206	10291
US TO OFF	19520	21751	1751246	6124597	440999	5576
US TO SOU	9389	10713	840491	3056575	246446	3120
US TO WTL	2016	2328	198640	803887	104552	1143
US TO SW	191	216	18249	71171	7077	90
US TO MTP	1016	1028	90291	288588	31132	362
OFF TO US	18864	20917	1706467	5897999	419705	5193
OFF TO OFF	17692	19562	1595412	5343547	376704	4670
OFF TO SOU	1160	1343	110174	546620	42163	511
OFF TO WTL	10	10	743	5360	479	6
SOU TO US	10096	11598	888836	3309154	270174	3538
SOU TO OFF	1827	2188	155769	779264	64207	904
SOU TO SOU	8225	9366	729961	2507304	203845	2604
SOU TO WTL	40	40	2850	20350	1941	27

	Average	Average		Average Revenue (cents)		
Tons Per Car	Revenues Per Car	Haul Per Ton	Per Car	Per 100 Pounds	Per Car	Per Ton-mile
80.4	286	285	284	17.8	100.5	1.2
80.4	280	250	255	17.4	109.9	1.3
78.5	285	293	291	18.2	98.0	1.2
85.3	345	526	491	20.2	70.3	.7
84.5	329	388	417	19.5	78.9	1.0
87.8	281	345	352	16.0	79.8	.9
81.5	280	245	247	17.2	113.6	1.4
81.5	271	235	237	16.6	114.4	1.4
82.0	407	383	381	24.8	106.9	1.3
74.3	536	645	630	36.1	85.1	1.1
76.6	285	304	305	18.6	93.5	1.2
71.2	356	412	413	25.0	86.2	1.2
77.9	268	279	278	17.2	96.3	1.2
71.3	509	681	681	35.7	74.7	1.0
64.0	559	704	664	43.7	84.2	1.2
78.7	212	219	226	13.5	93.5	1.2
78.8	203	203	209	12.9	97.1	1.2
70.9	821	1076	1076	57.9	76.3	1.0
84.4	317	360	382	18.8	83.1	1.0
75.5	496	539	546	32.8	90.9	1.2
86.3	273	324	344	15.8	79.6	.9
92.3	410	634	617	22.2	66.4	.7
97.6	568	959	953	29.1	59.6	.6
87.9	279	337	342	15.9	81.6	.9

80.4	287	286	286	17.8	100.5	1.2
80.5	282	252	256	17.5	109.8	1.3
78.5	285	293	291	18.2	98.0	1.2
85.3	345	526	491	20.2	70.3	.7
84.5	329	388	417	19.5	78.9	1.0
87.8	281	345	352	16.0	79.8	.9
81.6	282	246	248	17.3	113.6	1.4
81.6	273	236	239	16.7	114.4	1.4
82.0	407	383	381	24.8	106.9	1.3
74.3	536	645	630	36.1	85.1	1.1
76.6	285	304	305	18.6	93.5	1.2
71.2	356	412	413	25.0	86.2	1.2
77.9	268	279	278	17.2	96.3	1.2
71.3	509	681	681	35.7	74.7	1.0

TABLE 67 (cont.)

Territorial Movement	Sample Size	No. of Carloads	Weight (tons)	Revenue (dollars)	Ton Miles	Car Miles
					(in thousands)	
SOU TO SW	4	4	256	2236	180	3
WTL TO US	1175	1430	112509	302708	24611	324
WTL TO WTL	1150	1405	110729	285271	22483	294
WTL TO SW	20	20	1418	16425	1526	22
SW TO US	207	232	19583	73627	7044	89
SW TO WTL	39	39	2943	19331	1586	21
SW TO SW	167	192	16575	52510	5371	66
MTP TO US	1790	1859	171522	761330	108672	1147
MTP TO WTL	777	834	81375	473575	78063	795
MTP TO MTP	1011	1023	89947	285305	30310	350

29. *Selected Financial Data Relating to Class I Railroads Deriving More Than 20 Percent of Their Total Revenues from Coal Traffic*

The selected financial data of major Class I coal hauling railroads are based on the percentage of freight revenues derived from coal rather than on absolute coal revenues to prevent giving a distorted image. If absolute coal revenues were used, a list containing the 20 largest coal carrying roads would not include the Monongahela Railway Company even though that railroad derived 97 percent of its revenues from coal in 1971. Conversely, the Union Pacific Railroad would be included even though it only derived 3.2 percent of its revenues from coal.

There are 12 Class I railroads in the United States which derive more than 20 percent of their total revenues from coal traffic. Nine of these railroads are in the Eastern District and three are within the Southern District. In Table 68 below are listed these 12 railroads, the percent of their total revenues derived from coal traffic, their current ratios, cash flow coverage, fixed and contingent charge coverage, and their operating ratio.

Tons	Average Revenues	Average Haul		Average Revenue (cents)		
Per Car	Per Car	Per Ton	Per Car	Per 100 Pounds	Per Car	Per Ton-mile
64.0	559	704	664	43.7	84.2	1.2
78.7	212	219	226	13.5	93.5	1.2
78.8	203	203	209	12.9	97.1	1.2
70.9	821	1076	1076	57.9	76.3	1.0
84.4	317	360	382	18.8	83.1	1.0
75.5	496	539	546	32.8	90.9	1.2
86.3	273	324	344	15.8	79.6	.9
92.3	410	634	617	22.2	66.4	.7
97.6	568	959	953	29.1	59.6	.6
87.9	279	337	342	15.9	81.6	.9

TABLE 68

Class I coal hauling railroads deriving more than 20 percent of their revenue from coal traffic

	Percent of Total Revenues Derived From Coal Traffic[1]	1973 Current Ratio[3]	1973 Cash Flow Coverage[4]	1973 Fixed & Contingent Charge Coverage[5]	1973 Operating Ratio[6]
Eastern District Average		1.13	0.73	0.55	89.44
1. Monongahela Ry. Co.	96.9%	0.59	NEG.	0.76	73.58
2. Chesapeake & Ohio Ry. Co.	43.0%	1.35	2.30	3.01	79.51
3. Norfolk & Western Ry. Co.	37.4%	1.44	2.65	2.69	76.13
4. Bessemer & Lake Erie R.R. Co.	29.8%	1.91	NEG.	66.49	66.74
5. Western Maryland Ry. Co.	29.8%	1.35	2.01	1.78	77.79
6. Reading Co.[2]	25.8%	0.86	NEG.	NEG.	96.53
7. Missouri Illinois R.R. Co.	25.3%	4.08	1.88	2.31	29.27
8. Elgin, Joliet & Eastern Ry. Co.	21.9%	1.54	NEG.	NO CHGS.	73.51
9. Baltimore & Ohio R.R. Co.	21.7%	1.13	3.46	1.99	85.29
Southern District Average		1.53	2.06	2.63	80.47
10. Clinchfield R.R. Co.	54.5%	0.68	0.92	1.01	66.72
11. Georgia R.R. Lessee Organization	30.0%	0.81	2.76	1.00	101.49
12. Louisville & Nashville R.R. Co.	24.2%	1.35	1.65	2.01	81.53
All Class I Railroads		1.25	2.20	1.85	84.87

[1] Based upon 1971 statistics.

[2] In reorganization under Section 77 of the Bankruptcy Act.

[3] Total current assets ÷ Total current liabilities.

[4] Ordinary income plus depreciation and retirements ÷ long term debt due within one year.

[5] Income available for fixed charges ÷ fixed and contingent charges.

[6] Operating expenses plus net equipment rents ÷ operating revenues.

One of the essential elements of a reasonable rate structure is that it fosters sound economic conditions in transportation and among the several carriers. As a whole, we regard as satisfactory the financial condition of railroads deriving more than 20 percent of their revenue from coal. A notable exception is the Reading Company which is in reorganization under section 77 of the Bankruptcy Act. A part of the problem of the Reading Company stems from the depressed condition of the anthracite coal industry. With the possible exception of the Reading, on this record, there is not a single case where our analysis indicates that any financial problems which coal-carrying railroads may have can be traced to unprofitable coal traffic.

30. *Conclusions – Bituminous Coal Rate Structures East of the Mississippi River*

The most common characteristic of the bituminous coal rate structures east of the Mississippi River is the use of separate and distinct pricing techniques, each of which is tailored to the particular needs of shippers, receivers, and carriers. These distinct pricing techniques utilize a number of different types of rates: single-car, multiple-car, trainload, unit-train; and these types of rates (single-car, multiple-car, trainload, and unit-train) tied to annual-volume requirements. The pricing techniques also include rates conditioned upon the use of shipper-owned cars.

There is a full coverage of unconditional single-car commodity rates from all producing areas east of the Mississippi River to all coal consuming areas. A noticeable feature of the single-car rate structure is the wide blanketing of origins. In a given group, one point of origin may be 100 miles or more nearer to a given market than another point of origin but both origins have the same rate to the common market. The unconditional single-car rate structure generally follows an historical pattern of differentials which have been previously detailed herein; the annual-volume, multiple- car, trainload, and unit-train rates follow no such pattern.

The most important factor influencing the coal rate structures, next to cost of service, has been competition. The eastern coal producing areas are interlaced with a series of inland waterways. See Map Number II. The influence of water competition is present in all of the different types of rates. The presence of water competition can easily be observed in specific lake-cargo, tidewater, and ex-river rates. However, competition of coal with other fuels, notably oil, natural gas, and nuclear fission, has been an even greater competitive factor than carrier competition, particularly to electric utility plants. Moreover, coal carriers must compete with electricity transmitted from mine-mouth generating stations. Competition, along with cost of service, has frequently been the controlling factor in making rates for the movement of coal. In coping with this competition, the carriers tailored their rates to the shippers' needs and set the rates according to the particular competitive situation using the various ratemaking techniques. On shipments from Western Kentucky to Southeast, an estimated 69 percent of bituminous coal moves at trainload or unit-train rates and 23.6 percent at some other type of volume rate.

Figures H through AA, *supra*, indicate that although rates have been tailored to competitive situations, particular patterns of rates have emerged in relationship to Docket No. 28300 class-rate scale. As shown in figure H, *supra*, single-car rates, from all origins, range from 4 percent of class 100 to about 9 percent of class 100, with the predominant number of rates ranging from 5 to 8 percent. Similarly, multiple-car rates generally range from 4 percent of class 100 to 8 percent, with the predominant number of rates being between 5 and 6 percent (Figure N); trainload rates in carriers' equipment are generally from 3 to 7 percent with most rates ranging from 3 to 5 percent (Figure T); and trainload rates in shipper-owned cars generally range from 2 to 4 percent, with most rates approximating 3 percent (Figure AA).

Single-car rates from Appalachian region, excluding export, lake-cargo, and river traffic, to all territories, except the southeast (Figure K, supra) range generally between 6 and 9 percent. Single-car rates from the Appalachian and the Illinois-Indiana-Western Kentucky regions to the southeast (Figure J, *supra)* generally range from 4 percent to 9 percent. From the same regions to territories other than the southeast (Figure L, *supra)*, the range is generally 5 to 9 percent. On export, lake-cargo, and river traffic. (Figure I, *supra*). the single-car rates generally range from 4 to 9 percent, with export and lake-cargo rates at a higher level than rates on river traffic. Figure I also indicates the liberal disregard of distance with respect to rates on lake-cargo traffic.

Multiple-car rates, on line delivery from the Illinois-Indiana-Western Kentucky region (Figure O, *supra*) generally reflect a pattern of from 4 to 6 percent of class 100. The same level exists whether the rates are subject to annual volume or not, except the pattern indicates that annual-volume rates are generally maintained for distances over 480 miles. From the Appalachian and Illinois-Indiana-Western Kentucky region (Figure Q) to the southeast the same 4 to 6 percent pattern is reflected.

For trainload rates (carrier's equipment), (Figure V *supra*), the pattern is generally from 3 to 5 percent of class 100 on movements from the Illinois-Indiana-Western Kentucky region for on-line delivery. From the Appalachian Region to all territories except the southeast (Figure X, *supra*), the trainload rates – carriers' equipment – generally range from 4 to 6 percent, with rates subject to annual-volume requirements generally lower than rates not subject to annual volume requirements.

Trainload rates (shipper-owned cars) from Illinois-Indiana-Western Kentucky region (Figure Y, *supra*) generally range from 2 to 4 percent of class 100, with the dominant number about 3 percent; from the Appalachian region, except to the Southeast, trainload rates in shipper-owned cars (Figure Z, *supra*) also generally range from 2 to 4 percent, with the dominant number of rates about 4 percent.

No unreasonable pattern of rates appears to exist on movements of coal from the Appalachian and Illinois-Indiana-Western Kentucky regions. The normal class rate on bituminous coal (although little or no traffic moves at such class rates) is 17-1/2 percent of class 100. The lowest scale of class rates published by the railroads on any traffic is 8 percent of class 100. As seen, few (mostly unconditional single-car) rates on bituminous coal are above 8 percent. In relation to class rates, the going level of rates on bituminous coal does not appear to be unreasonably high.

We are also convinced from the cost-revenue comparisons (Tables 53 to 60) that the rates on bituminous coal from coal producing origins east of the Mississippi River are within the zone of reasonableness. The comparisons indicate that in general the rates on bituminous coal are compensatory and not unreasonably high. Although certain steel companies and electric utilities contend that the rates on bituminous coal to their plants are unreasonably high, we do not find such is the case. Even accepting as completely accurate the statement of the electric utilities that the revenues derived by the railroads from coal movements to four utility companies amount to 162 percent of the variable expense, and 176 percent of variable costs on movements to plants of three major steel companies, we do not regard this as unreasonably high. Compare *American Colloid Co.* v. *Akron C. & Y. R. Co.*, 321 I.C.C. 91; and Docket No. 35380, *National Electrical Manufacturers Association* v. *Aberdeen & Rockfish R. Co.* (dando) decided February 4, 1974.

In addition, revenues, and trends in those revenues, are highly significant in measuring the reasonableness of a freight rate structure even without a comparison to costs. A comparison of rail rates with the value of coal shows a substantial downward trend in the percentage relationship of rates to value of the commodity. (Table 7, *supra)*. In addition, a comparison of unconditional single-car rates with multiple-car, trainload, unit-train, and annual-volume rates indicates that competition has been an effective regulator of rates on bituminous coal from origins east of the Mississippi River. In the Southern District in constant dollars the average expense per 1,000 gross ton miles and revenues per ton from coal followed a similar pattern until 1966. After 1966, coal revenue dropped substantially below average expenses. In terms of constant dollars, there has been a substantial downward trend in the general rate level on coal. Similar statistics, if developed for all territories, would in all probability show a similar trend.

Apart from general increase proceedings in which shippers oppose the application of such increases on coal, there have been few complaints by coal shippers, receivers, and localities against the coal rate structures.

Since the beginning of 1971 (apart from general increase proceedings discussed in Parts II, III, IV, and V), less than 25 formal cases (including cases involving requests for suspension of proposed rates) have come before the Commission involving coal movements. Several of these cases have a common theme, to wit, that the annual - volume provisions are in some way discriminatory because they are not applicable to the particular complaining shipper. Others involve the lawfulness of demurrage charges and applicability of tariff provisions.

Considering the large number of coal interests in the United States the small number of complaints is a favorable factor in measuring the reasonableness of the freight rate structures on coal.

We conclude that the rates on bituminous coal from mine origins east of the Mississippi River are compensatory and not unreasonably high. Our conclusions are, of course, not to be taken as blanket approval of each and every rate applying on bituminous coal from such origins. However, the attack on specific rates, or proposed changes in such rates, can best be met by the filing of specific complaints.

31. *Conclusions - Bituminous coal rate structures west of the Mississippi River*

In coal producing districts number 16 through 22 (see map Number III), which include the States of Montana, Wyoming, and North Dakota, are the world's largest reserves of low-sulfur coal. The demand for this coal is intense.

In part, the position of certain representatives of this area can be summarized by the following testimony on behalf of the Old West Regional Commission:

> The Upper Missouri River region, as represented by the Old West Regional Commission, is entitled to develop its economy in the same manner as other sections of the Nation. We wish to halt the out-migration of our citizens; we seek alternatives to constant adjustment to rapid change in agriculture; we would like to develop our industry and economy in a reasonable manner, and that includes development of a viable non-farm sector.
>
> We now have a critical demand for a major and vital resource of paramount importance - our coal. If it is to be extracted to fuel established industrial activities elsewhere, this will, in turn, have an impact and effect on our member States. It is not my intention to engage in an extended debate as to whether economic, industrial, transportation, and competitive conditions must be identical before rate structure reform, including a better degree of rate relationship, can take place. We want the

> **railroads serving our area to prosper; hopefully, they can avoid the critical problems facing the Eastern carriers.**
>
> **At the same time, however, we want a reasonable and sensible balance in the coal rate structure on Old West-area coal. Assuming that environmental consideration can be put into proper perspective, we would like to see consideration given to development of a rate structure which will encourage the use of coal for reasonable economic development within our member States. At the same time, environmental considerations permitting, we do not object to the carriers obtaining feasible long hauls at rates reflecting the inherent economic advantage of rail service. We ask only that some reasonable balance be struck.**

The question of widespread coal extraction in an area largely natural, range, or agricultural in setting presents obvious ratemaking considerations different from those in the East which for many years has been, and presently is, the major source of coal in the United States and has a full coverage of commodity rates generally satisfactory to shippers and receivers.

The rate structure in districts numbered 16 through 22 is in need of guidelines as to zone of reasonableness, and possibly the prescription of reasonable rates from and to particular areas. Unlike the rate structures in the East which are subject to water carrier competition, the carriers in the Rocky Mountain-Upper Missouri River region are not subject to that competition in nearly the same degree. In our opinion the rates on bituminous coal in this area should be structured in a fashion which gives full consideration to the future needs of the industries, present and potential, within the Rocky Mountain-Upper Missouri River Region. Unlike the East, this region does not presently have full coverage of commodity rates on the movement of bituminous coal. The Coordinator, however, does not believe that the coal freight rate structure should be used to either inhibit or promote the course of future coal production from a particular region or the level of coal traffic from such region. Such a rate structure would be inherently unsound since the Commission has the responsibility of insuring that the public has a just, reasonable and non-discriminatory rate structure for the movement of coal from all regions.

The Coordinator therefore recommends that the Commission institute a proceeding, separate and apart from Ex Parte No. 270, for the purpose of determining a zone of reasonable rates for application on bituminous coal from districts 16 through 22 (excluding California), to points in the United States except those west of the Rocky Mountains. The order of investigation should be preceded by, or accompany, an appropriate environmental impact statement. The record in this proceeding indicates that in general most of the single-car rates on bituminous coal fall within a range of 4 to 9 percent of class 100; multiple-car rates, 4 to 8 percent; trainload rates, carrier-owned equipment, from 3 to 7 percent; and in trainloads, shipper-owned cars, from 2 to 4 percent. The Coordinator is of the view that these, or a similar distance scale of rates can be used as a basis for the investigation and an appropriate environmental impact statement.

The Coordinator recommends that the other districts west of the Mississippi River (12, 14, 15, 18, and 23) not be included in the above investigation. These districts produced less than 17 million tons of coal in 1972, and most of the coal moves in intrastate commerce under intrastate rates, or to adjoining States.

SUBCHAPTER B – RATE STRUCTURE AND MOVEMENT OF LIGNITE

As with other grades of coal, lignite, or brown coal, is defined by its relative amounts of fixed carbon, volatile matter, and moisture. The general standards for lignite are set at 37.8 percent fixed carbon, 18.8 percent volatile matter, and 43.4 percent moisture. The heating value of this composition lignite is 7,400 British Thermal units (B.T.U.) per pound.

Consumers, notably utilities, purchase fuel based on delivered price per B.T.U. Since lignite has the least B.T.U.'s per pound of any grade of coal, lignite producers must establish a lower price per ton to stay competitive with producers of other grades of coal. To accomplish this end, lignite producers must employ the cheapest mining techniques, especially strip mining. In 1971, strip mining was the sole method of lignite extraction employed. In that same year, the average value per ton of lignite, f.o.b. mine, was $1.93.

Sizeable measured and indicated reserves of lignite exist in Montana, North Dakota, South Dakota, and Texas. Smaller reserves are known to exist in Alabama, Alaska, Arkansas, and Wyoming. Reserves in all other States amount to less than one percent of the total reserves of 50,781 million tons. Table 69 shows estimated original or remaining reserves of lignite. At present, only strippable reserves can be mined profitably. Table 70 shows estimated strippable reserves of lignite.

TABLE 69

Estimated original or remaining reserves of lignite according to thickness of beds and with less than 1,000 feet of overburden (Million Tons)

State	Remaining Resources 1/1/70	Production Plus Loss in Mining	Reserves According to Bed Thickness 5'-10'	Over 10'	Total Over 5'
Alabama	20	0	0	0	0
Alaska	*	0	0	0	*
Arkansas	350	0	0	0	0
Kansas	*	0	0	0	*
Montana	87,527	6	4,960	1,918	6,878
North Dakota	350,650	260	22,591	13,639	36,230
Oklahoma	*	0	0	0	*
South Dakota	2,031	2	705	52	757
Texas	6,870	200	6,870	0	6,870
Washington	117	0	0	0	0
Wyoming	*	0	0	0	*
Other States	46	4	46	0	46
Total	447,611	472	35,172	15,609	50,781

*Small resources and production of lignite.

TABLE 70

Summary of Estimated Reserves of Strippable Lignite in the United States (Million Short Tons)

State	Remaining* Reserves	Available* Reserves	Maximum Bed (inches)	Maximum Overburden (feet)
Arkansas	32	25	60	100
Texas	3,272	1,309	60	90
Montana	7,058	3,497	60	60 to 125
North Dakota	5,239	2,075	60	50 to 125
South Dakota	399	160	60	100
Total	16,008	7,071		

*Remaining strippable reserves are total original lignite resources reduced by depletion computed from past strip production. Available strippable reserves are that portion of remaining reserves presently economically recoverable. Economic recoverability is determined by the ratio of bed thickness to overburden.

Offsetting the market disadvantages of lignite's low B.T.U. content is its characteristically low sulfur content. Seventy-seven percent of the estimated remaining lignite reserves, 344,623.6 million short tons, has 0.7 percent or less sulfur content. Another 13.7 percent has between 0.8 and 1.0 percent sulfur content. This compares with only 14.3 percent of remaining bituminous reserves containing 0.7 percent or less sulfur and 15.2 percent of bituminous reserves containing between 0.8 and 1.0 percent sulfur. Nearly all of the low sulfur lignite is in Montana and North Dakota, not near any location where the low-sulfur fuel needed to meet pollution standards is in short supply. Mine-mouth generating stations and coal gasfication are two methods presently being studied as means of getting this low-pollution energy to distant markets.

For several reasons, lignite's radius of distribution tends to be smaller than the radius for other grades of coal. Because of its relatively high moisture content, lignite will tend to crumble and powder easily. This characteristic creates the danger of spontaneous combustion or explosion if the lignite is

TABLE 71

Territorial Movement	Sample Size	No. of Carloads	Weight (Tons)	Revenue (Dollars)	Ton Miles	Car Miles
					in Thousands	
STCC No. 1122	LIGNITE					
US TO US	437	437	33787	72751	5992	82
US TO OFF	29	29	2430	6830	444	6
US TO WTL	362	362	28222	60705	5246	71
US TO MTP	42	42	2872	2573	49	1
OFF TO US	28	28	2412	6393	436	5
OFF TO OFF	28	28	2412	6393	436	5
WTL TO US	364	364	28326	62568	5449	75
WTL TO WTL	361	361	28158	60236	5210	70
MTP TO US	42	42	2872	2573	49	1
MTP TO MTP	42	42	2872	2573	49	1

kept confined, as during long distance transport. Moreover, since the delivered price per ton for lignite must be less than for higher grades of coal with which it competes, transportation costs must be low if lignite is to move any substantial distance from the area in which it is mined. Notwithstanding the disadvantages of widespread lignite distribution, U.S. lignite producers exported 75,120 tons of lignite in 1972 at a value of $4,284,985. The largest volume of exports went to Mexico, Canada, and Mozambique. Smaller amounts were shipped to Venezuela and Singapore.

Total U.S. lignite production in 1971 was 6,402,000 tons, excluding production in Texas. Virtually all of that production originated in North Dakota and Montana. In 1971, North Dakota lignite production was 327,000 tons. North Dakota production for the 1972 and 1973 fiscal years was 6,343,769 and 6,798,607 tons, respectively. Of the lignite mined in 1971, 3,411,000 tons left the mine by rail; 216,000 tons left the mine by truck; 2,709,000 tons were consumed at minemouth generating stations; and 66,000 tons were used for all other purposes.

Average		Avg/Haul		Average Revenue (Cts)		
Tons P/Car	Rev P/Car	Per Ton	Per Car	P/100 Lbs	P/Car Mile	P/Ton Mile
77.3	166	177	187	10.8	89.2	1.2
83.8	236	183	190	14.1	123.9	1.5
78.0	168	186	196	10.8	85.6	1.1
68.4	61	17	17	4.5	360.4	5.2
86.1	228	181	180	13.3	126.8	1.4
86.1	228	181	180	13.3	126.8	1.4
77.8	172	192	205	11.0	83.8	1.1
78.0	167	185	195	10.7	85.6	1.1
68.4	61	17	17	4.5	360.4	5.2
68.4	61	17	17	4.5	360.4	5.2

The DOT carload waybill statistics show the size and geographical distribution of lignite terminated by rail for the year 1972. Table 71 summarizes that data at a one-percent level.

Although accurate data have not been available since 1950, production in Texas is reported to have increased substantially in recent years. Currently, lignite is stripmined at locations in two counties with the production used as fuel in the manufacture of aluminum, carbon black, and coal chemicals. Lignite will also fuel a steam-electric generating plant currently under construction in Texas.

Tables 72, 73, and 74 show representative rail rates and costs on lignite screenings for single-car, multiple-car, and trainload movements, respectively. In North Dakota, all of the lignite mines located north of Mandan in Mercer County are grouped together. The other three active lignite mines are not grouped.

Most western coal moves under trainload or unit-train rates. This is especially true of lignite which tends to move only to large consumers and must be used in greater quantities than other grades of coal. In 1972 the 5 representative single-car rates shown moved an estimated 236,052 tons, while 703,172 tons moved under the multiple-car and trainload rates.

Generally, single-car rates provide that carriers will weigh cars, and provide for normal coal demurrage free time at origin and destination of 48 hours. The multiple-car rates shown are those for which no annual-tonnage requirements are named. There is no consistent pattern to present multiple-car rates as most of them have been established to meet a specific competitive condition, generally oil or gas competition. Many of the rates are limited as to loading and unloading times, weighing of cars and size of cars used. Because of their tonnage requirements, their applications have been limited to those receivers capable of receiving such tonnages under the limitations named in the rate item. The amounts these rates reflect under the single-car rates vary with no specific relationship for the most part.

There are no formulae used which relate trainload and unit train rates to those shown in Tables 73 and 74. The rates are patterned to the specific service considerations of the receiver and shipper. Some are based on 24 hours loadings and unloading; some on much less time because of more efficient loading and unloading facilities. Others are published for use of carrier-furnished coal cars and some for receiver-furnished cars. Some are predicated on long term continuous operation of the rail service, while others are on a year to year basis. Usually only one shipper and one receiver are able to use a particular rate because that rate has been designed for the service considerations necessary to move the needed tonnage.

From a cost standpoint the rates on lignite appear compensatory and not unreasonably high.

TABLE 72

Representative rail rates and costs on lignite screenings, single-car movements

Line No.	Origin	Destination	Minimum Weight (Open Top Cars)	Actual Miles	Estimate of Tonnage 1972	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)
1.	Beulah, N.D.	Crookston, Mn.	LFVC*	343	34,962	99.42	1.33	455	3.84	5.64	4.72	5.04
2.	Beulah, N.D.	Moorhead, Mn.	LFVC*	274	3,464	125.91	1.50	Note-1 411	3.14	4.74	3.82	4.12
3.	Larson, N.D.	Bingham, Mn.	LFVC*	329	119,018	85.71	1.32	Note-2 434	4.19	5.95	5.18	5.49
4.	Larson, N.D.	Wilds, Mn.	LFVC*	326	74,433	85.28	1.33	Note-2 434	4.22	5.97	5.22	5.53
5.	Larson, N.D.	East Grand Forks, Mn.	LFVC*	299	4,175	116.05	1.45	Note-3 434	3.41	5.08	4.17	4.47

Explanation of Reference Marks and Notes
*Marked capacity of car, except when car is loaded to full visible capacity actual weight will apply.

NOTE

1. The annual-volume rate of 377¢ applies on 40,000 tons, however if this tonnage is not met the listed single-car rate is applied.
2. The annual-volume rate of 402¢ applies on 40,000 tons, however if this tonnage is not met the listed single-car rate is applied.
3. The annual-volume rate of 392¢ applies on 40,000 tons, however if this tonnage is not met the listed single-car rate is applied.

TABLE 72A

Representative rail rates and costs on lignite screenings, single-car movements

Line No.	Origin	Destination	Ratio (%) of Rate to Variable Costs	Rate (%) of Rate to F.A. Costs: Ton and Ton-Mile	Rate (%) of Rate to F.A. Costs: Car and Car-Mile	Rate (%) of Rate to F.A. Costs: Dollar Basis
1.	Beulah, N.D.	Crookston, Mn.	118	81	96	90
2.	Beulah, N.D.	Moorhead, Mn.	131	87	108	100
3.	Larson, N.D.	Bingham, Mn.	104	73	84	79
4.	Larson, N.D.	Wilds, Mn.	103	73	83	78
5.	Larson, N.D.	East Grand Forks, Mn.	127	85	104	97

TABLE 73

Representative rail rates and costs on lignite screenings multiple-car movements

Origin	Destination	Rate in Cents NT in effect Sept. 1, 1973	Minimum Tender Net Tons	Actual Miles	Rate Reduction Under Single-Car Rate, in cents Net ton	Estimate of Tonnage 1972
Cecil, Mt.	Chicago, Ill.	1075	5 Cars	1114	No Single Car Rate	None
Baukol-Noonan Siding, N.D	Red Wing, Mn.	560	10 Cars	611	9	34918

TABLE 73A

Representative rail rates and costs on lignite screenings multiple-car movements

				Fully Allocated Cost Per Net Ton				Ratio (%) of Rate to F.A. Costs		
Origin	Destination	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Ton and Ton-Mile (Dollars)	Car and Car-Mile (Dollars)	Dollar Basis (Dollars)	Ratio (%) of Rate to Variable Costs	Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
Cecil, Mt.	Chicago, Ill.	10.75	7.47	11.46	9.52	9.78	144	94	113	110
Baukol-Noonan Siding, N.D.	Red Wing, Mn.	5.60	4.95	7.51	6.37	6.49	113	75	88	86

TABLE 74

Representative annual-volume rail rate on lignite screenings trainload movements

Origin	Destination	Rates in Cents NT in effect Sept. 1, 1973	Trainload Weights (tons, except as noted) Minimum	Maximum	Car Ownership	Average Tons Per Car	Miles Actual	Annual Tonnage (Aggregate) Tariff Requirement	Actual Calendar Year 1972
Beulah, N.D	Hoot Lake, Mn.	408	LFVC	None	Carrier'	91	330	12,000 but less than 265,000	
		383	"	"	"	"	"	100,000 more to 364,999	
		330	"	"	"	"	"	100,000 more to 464,999	668,254
		260	"	"	"	"	"	100,000 more to 564,999	
		246	"	"	"	"	"	565,000 and over	

TABLE 74A

Representative annual-volume rail rates and costs on lignite screenings trainload movements

Origin	Destination	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton			Ratio (%) of Rate to Variable Costs	Ratio (%) of Rate to F.A. Costs		
				Ton and Ton-Mile (Dollars)	Car and Car-Mile (Dollars)	Dollar Basis (Dollars)		Ton and Ton-Mile	Car and Car-Mile	Dollar Basis
Beulah, N.D.	Hoot Lake, Mn.	4.08	2.14	3.90	2.84	2.80	191	105	144	146
		3.83	2.14	3.90	2.84	2.80	179	98	135	137
		3.30	2.14	3.90	2.84	2.80	154	85	116	118
		2.60	2.14	3.90	2.84	2.80	121	67	92	93
		2.46	2.14	3.90	2.84	2.80	115	63	87	88

SUBCHAPTER C–RATE STRUCTURE AND MOVEMENT OF ANTHRACITE COAL

Anthracite, or hard coal, has a composition of approximately 95.6 percent fixed carbon, 1.2 percent volatile matter, and 3.2 percent moisture. When burned, coal of this composition yields 14,400 B.T.U.'s. Traditionally, anthracite has occupied a dominant position in the domestic fuel market but is not as well adapted for steam raising or for general use in manufacture as some other coals unless a smokeless fuel is desired. This is because anthracite does not have as high a heating value as some coals of lower rank. Its hardness permits preparation of sizes to meet specific market needs.

Anthracite coal is not a major economic factor today. In 1972, anthracite production totaled 6,462,093 tons. This amount was equal to only 7.1 percent of the record U.S. production of 91.5 million tons in 1913, and was the lowest since 1865. Table 75 shows anthracite production for several years from 1945 through 1972.

TABLE 75

Year	Production
1945	55,901,235 N.T.
1950	46,339,255 N.T.
1955	25,934,792 N.T.
1960	17,721,113 N.T.
1965	14,229,817 N.T.
1966	12,031,375 N.T.
1967	11,552,441 N.T.
1968	11,025,482 N.T.
1969	10,165,805 N.T.
1970	9,248,011 N.T.
1971	8,187,961 N.T.
1972	6,462,093 N.T.

The DOT carload waybill statistics provide data for rail cars terminated in the year 1972. The statistics are reported at a one-percent level as shown in Table 77 below.

From the above, it is apparent the "market" was lost in the period between 1945 and 1960, when production dropped over 38 million tons. Anthracite, used mainly in furnaces for heating homes and small buildings, was affected, for the most part, by the introduction of oil and gas into the home heating market. These latter fuels were preferred by the householder for their cleanliness and convenience – even though their cost was higher.

As the production of anthracite has dropped, so, naturally, has the tonnage handled by the railroads, as shown in Table 76:

TABLE 76

Year	Rail Originated
1966	5,136,301 N.T.
1967	4,763,403 N.T.
1968	4,205,841 N.T.
1969	4,058,437 N.T.
1970	3,418,863 N.T.
1971	3,560,730 N.T.

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TABLE 77

Territorial Movement	Sample Size	No. of Carloads	Weight (Tons)	Revenue (Dollars)	Ton Miles	Car Miles
					In Thousands	

STCC No. 111 Anthracite

Percent Total OCS Traffic Terminations: Revenue .86 Carloads 1.33 Tons 1.32

US TO US	422	577	38402	150981	8462	140
US TO OFF	382	535	36018	121207	5531	88
US TO SOU	29	31	1762	16769	1604	29
US TO WTL	4	4	230	3307	260	5
US TO MTP	7	7	392	9698	1066	19
OFF TO US	421	576	38336	149721	8325	138
OFF TO OFF	382	535	36018	121207	5531	88
OFF TO SOU	29	31	1762	16769	1604	29
OFF TO WTL	4	4	230	3307	260	5
OFF TO MTP	6	6	326	8438	929	17

STCC No. 11112 Prepared Anthracite

Percent Total OCS Traffic Terminations: Revenue .85 Carloads 1.43 Tons 1.41

US TO US	364	373	23155	141125	8097	135
US TO OFF	324	331	20771	111351	5167	83
US TO SOU	29	31	1762	16769	1604	29
US TO WTL	4	4	230	3307	260	5
US TO MTP	7	7	392	9698	1066	19
OFF TO US	363	372	23089	139865	7960	133
OFF TO OFF	324	331	20771	111351	5167	83
OFF TO SOU	29	31	1762	16769	1604	29
OFF TO WTL	4	4	230	3307	260	5
OFF TO MTP	6	6	326	8438	929	17

Average		Avg/Haul		Average Revenue (Cts)		
Tons P/Car	Rev P/Car	Per Ton	Per Car	P/100 Lbs	P/Car Mile	P/Ton Mile
66.6	262	220	243	19.7	107.9	1.7
67.3	227	154	164	16.8	138.4	2.1
56.8	541	911	922	47.6	58.7	1.0
57.5	827	1129	1219	71.9	67.8	1.2
56.0	1385	2720	2703	123.7	51.2	.9
66.6	260	217	239	19.5	108.6	1.8
67.3	227	154	164	16.8	138.4	2.1
56.8	541	911	922	47.6	58.7	1.0
57.5	827	1129	1219	71.9	67.8	1.2
54.3	1406	2851	2808	129.4	50.1	.9
62.1	378	350	362	30.5	104.6	1.7
62.8	336	249	249	26.8	134.9	2.1
56.8	541	911	922	47.6	58.7	1.0
57.5	827	1129	1219	71.9	67.8	1.2
56.0	1385	2720	2703	123.7	51.2	.9
62.1	376	345	357	30.3	105.3	1.7
62.8	336	249	249	26.8	134.9	2.1
56.8	541	911	922	47.6	58.7	1.0
57.5	827	1129	1219	71.9	67.8	1.2
54.3	1406	2851	2808	129.4	50.1	.9

Table 78 shows the remaining resources of anthracite with less than 1,000 feet of overburden as of 1970.

TABLE 78
(Million Tons)

State	Remaining Resources
Arkansas	416
Colorado	78
New Mexico	4
Pennsylvania	12,525
Virginia	343
Washington	5
TOTAL	13,371

Commercial production of anthracite is limited to Pennsylvania.

The approximate domestic consumption of anthracite in 1971 was as follows: 53 percent for residential and commercial heating purposes, 22 percent for public utility plants, 11 percent for the iron and steel industry, and 14 percent for all other uses. The Federal Government continued to supplement the fuel needs of the U.S. Armed Forces in West Germany with purchases of anthracite. Shipments in 1971 were 718,000 tons.

All anthracite moving by rail is shipped under single-car rates. Table 79 shows representative rates on movements of anthracite coal. Because of the size of the anthracite producing region, mines are not grouped into origin districts.

Included in Table 79 are the regional average costs of movements of coal for the distance shown. From a cost standpoint, the rates on anthracite coal are maintained at a very low level and some traffic is transported at a loss. In view of the declining importance of anthracite, an increase in rates might serve to discourage production. This matter, while not warranting Commission action in this proceeding at this time, does appear to require study by the involved carriers.

TABLE 79

Rates and costs on anthracite coal

Origin	Destination	Distance (miles)	Earnings Per Car-Mile (Cents)	Earnings Per Ton-Mile (Cents)	Rate Per Net Ton (Dollars)	Variable Cost Per Net Ton (Dollars)	Fully Allocated Cost Per Net Ton: Ton and Ton-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Car and Car-Mile (Dollars)	Fully Allocated Cost Per Net Ton: Dollar Basis (Dollars)	Ratio (%) of Rate to Variable Costs	Rate (%) of Rate to F.A. Costs: Ton and Ton-Mile	Rate (%) of Rate to F.A. Costs: Car and Car-Mile	Rate (%) of Rate to F.A. Costs: Dollar Basis
Gilberton, Pa.	Ironton, Ohio	704	73.04	1.15	8.11	8.53	11.38	10.49	10.82	95	71	77	75
Locust Summit, Pa.	Benson Mines, N.Y.	557	76.26	1.20	6.70	6.81	9.18	8.41	8.63	98	73	80	78
Locust Summit Pa.	Parsons, W. Va.	366	114.33	1.80	6.60	5.45	7.22	6.60	6.91	121	91	100	96
Tremont, Pa.	Wrentham, Mass.	450	93.13	1.47	6.61	7.40	9.44	8.75	9.39	89	70	76	70
Tamaqua, Pa.	Keokuk, Iowa	1,188	51.93	.82	9.73	12.43	16.75	15.49	15.81	78	58	63	62
Minersville, Pa.	Wyandotte, Mich.	924	55.65	.88	8.11	9.87	13.36	12.30	12.56	82	61	66	65
Tamaqua, Pa.	Tarrant, Ala.	1,137	52.02	.82	9.33	11.04	14.88	13.81	14.14	85	63	68	66

PART II – IMPACT OF GENERAL RATE INCREASES UPON RAIL TRANSPORTATION OF COAL

The record in this proceeding is persuasive that general freight rate increases applied to the transportation of coal have not been self-defeating. The evidence indicates that such increases have been necessary in generating additional revenues.

The series of general increases in coal rates beginning in 1967 did not cause any significant diversion of coal traffic from the rails to other forms of transportation, nor did it result in any material displacement of coal by other energy sources. Where such displacement was threatened, the record is persuasive that the carriers reduced those specific rates carrying the threatened tonnage, often accompanied by the introduction of new and economical types of service. Railroad coal traffic remained relatively stable both in and of itself and in comparison with all freight handled by rail. This is illustrated in the following table taken from the Commission's Freight Commodity Statistics:

TABLE 80

	NET TONS ORIGINATED		
Year	Bituminous Coal and Lignite	All Freight Traffic	Percent Bituminous Coal and Lignite of All Freight Traffic Tons Originated
1966	367,505,670	1,447,851,845	25.38
1967	376,703.825	1,406,668,394	26.78
1968	371,653,808	1,430,441,120	25.98
1969	376,336,015	1.472,619,271	25.56
1970	398,830,203	1,484.110,336	26.87
1971	354,953,635	1,390,232,951	25.53
1972	371,135,163	1,447,203,098	25.64

Fluctuations in tonnage during this period occurred for reasons entirely unrelated to rail freight rate levels. For example, the seven-year low occurring in 1971 was attributable to a national coal strike of some 45 days' duration—the longest strike in twenty-three years. The 1970 high resulted in large part from an extraordinary increase in export coal tonnage caused by acute shortages of coking coal overseas due to an unprecedented expansion of steel production. When foreign coking coal sources stepped up production, coal exports returned to normal levels as shown in Table 81 below.

During the seven-year period, 1966-1972, the proportion that transportation charges bore to the delivered price of coal declined despite the general rate increases applied during that period. This fact is of great significance in

TABLE 81

BITUMINOUS COAL EXPORTED FROM UNITED STATES TO OVERSEAS DESTINATION

Year	NET TONS
1966	33,421,327
1967	34,158,244
1968	33,815,043
1969	39,330,289
1970	52,062,175
1971	38,783,747
1972	37,367,597
1973*	36,333,833

*Preliminary

any determination of the effect of increases in coal rates on coal traffic. Table 82 compares coal prices and rail rates for the period 1966 through 1972.

TABLE 82

Year	Average Realization Coal F.O.B. Mine	Average Rail Rate	Total	% of Destination Value	
				Coal	Rail Rate
1966	$4.54	$3.01	$ 7.55	60.1	39.9
1967	4.62	3.00	7.62	60.6	39.4
1968	4.67	3.01	7.68	60.8	39.2
1969	4.99	3.10	8.09	61.7	38.3
1970	6.26	3.41	9.67	64.7	35.3
1971	7.07	3.70	10.77	65.6	34.4
1972	7.53	3.67	11.20	67.2	32.8

The fact that coal producers have been able to obtain major price increases demonstrates that the relatively modest increases in coal rates have not affected rail transportation of coal.

During the period from 1967 to 1972, the only significant market in which rail transportation of bituminous coal declined was east coast utility destinations. This decline, however, was attributable either to ecological considerations or to the availability of residual fuel oil at prices so low that coal was eliminated as a competitive factor without regard to rail rate levels. As an example, beginning in February, 1967, Public Service Electric & Gas Company, New Jersey's largest utility converted about half of its electric generating capacity from coal to fuel oil. At the time of these conversions, Public Service had the benefit of trainload rates which were only 90 to 93 percent of the rates in effect ten years earlier, i.e., February 1957. Public

Service's 1969 annual report makes it clear that the conversion was due to air quality considerations rather than rail rate levels.

Similar considerations prompted other eastern utilities such as Rochester Gas and Electric, Philadelphia Electric, and Consolidated Edison to convert to oil.

Another factor, coupled with the promulgation of air quality controls, which led to oil conversions on the east coast, was the availability, due to the elimination of import controls, of residual oil at prices which could not be met. As an example, in 1969, Virginia Electric Power Company (VEPCO) converted its plant at Portsmouth, Va., from coal to oil.

In 1959, the Commission in *Coal From Ky., Va., & W. Va., to Virginia,* 308 I.C.C. 99, authorized the establishment of conditional-volume rates which effected a reduction of 35 cents per ton in the rates on bituminous coal to Portsmouth. A further reduction of 80 cents per net ton was published in 1965.

When it became known in the latter part of 1968 that VEPCO was considering converting its Portsmouth, Va., plant to oil, several meetings were held by the utility and railroad representatives to determine if any action could be taken by the carriers alone or in concert with coal suppliers that would retain the plant on coal. It developed that for coal to remain competitive at that waterfront generating station an additional reduction of about $1.50 per ton would be necessary in the delivered cost of coal. A reduction of this magnitude could not be undertaken by the carriers. The conversion to oil was made in 1969.

Low cost residual oil is no longer available. At the present time, and despite the precipitous increases in prices, coal, including spot coal is less costly than oil.

With the probability that an energy shortage will continue for the foreseeable future, the coal industry has sharply revised upwards its forecasts to reflect the current outlook for increased coal production.

The future of coal is bright. As coal production increases, the railroads may expect to increase their total coal tonnage, and in view of the current demand for coal it is improbable that such demand will be curtailed by reasonable rail rate increases.

Since Ex Parte No. 262, the Commission has granted the same increases on lignite coal as have been granted on bituminous coal. The application of the full increase has not impeded the lignite markets as carriers have continued to handle increased tonnage of lignite in interstate service. Lignite production in North Dakota has continued to increase, and in 1973 it was higher than for any previous year. Generally, all ex parte increases have been applied to the single-car and multiple-car rates. The heavy tonnages now moving in trainload service are moving on rates which have been in effect for a period of less than 10 years and which are lower than the single-car and multiple-car rates.

The series of freight rate increases applicable on anthracite coal have not affected the rate of production. This market was affected by conditions other than freight rates a number of years prior to 1966. The anthracite coal market was lost in the period between 1945 and 1960. Anthracite, used mainly in furnaces for heating homes and small buildings, was affected for the most part by the introduction of oil and gas into the home heating market. These latter fuels were preferred by the household for their cleanliness and convenience.

PART III

DISPARITIES AND DISTORTIONS IN THE COAL FREIGHT RATE STRUCTURE

To say that the application of the general increases granted by the Commission since Ex Parte No. 256 has caused violent disparities or distortions in the historical basis for establishing and maintaining rates would be incorrect. The applications of the increases, particularly those which were granted on a straight percentage basis have clearly caused some changes. But, the changes have come in slow gradations, often accompanied by changes in the types of service offered by the carriers.

The most obvious distortion resulting from application of the increases is the widening of differentials between rate groups. For example, in the Southern District we find that to destinations where the rates from the L&N Railroad Harlan group were generally made 17 cents per ton higher than the base group rates, these rates now are 22 or 23 cents higher than the base group rates; the difference being determined by the measure of the rate and the disposition of fractions in the application of the ex parte increases. The widening of the rate differentials to this degree was not an abrupt change, but has come about gradually since the imposition of the straight 6 percent increase granted in Ex Parte No. 262.

Table 83 shows other single-car rates and differentials from origins in the southern Appalachian Region to Kannapolis, N.C.

Although the absolute value of the differentials has increased, the percentage of the through rate represented by the differential has decreased. This phenomenon is shown in Table 84.

While these examples only refer to traffic within the southern district, the situation would be similar when considering differentially related groups of other districts.

Nonetheless, there is no evidence that these changes in differentials have in any way inhibited the free flow of coal from the various mine origin groups.

TABLE 83

Single-car rate and differentials from southern appalachian origin districts to Kannapolis, N.C.
(Rates in cents per ton)

Origin District	Rate X-303 Level	Present Differential	Historic Differentials	Differential Increase
Lake City # 27	548	Base Group	Base Group	Base Groups
Pioneer #28	555	7¢	6¢	+ 1¢
Jellico #29	563	15¢	11¢	+ 4¢
Middlesboro #30	563	15¢	11¢	+ 4¢
Glen Mary #34	571	23¢	17¢	+ 6¢
Rathburn #36	571	23¢	17¢	+ 6¢
Pine Knot #37	583	35¢	28¢	+ 7¢
Petros #38 (H&NE)	563	8¢ (1)	6¢ (1)	2¢ (1)
Dayton #39	571	23¢	17¢	+ 6¢
Somerset #40	598	50¢	39¢	+11¢
S.W.Va. (Sou)	548	None	None	None
S.W.Va. (Int)	548	None	None	None

(1) – 8¢ under Glen Mary today. Historically this group was 6¢ under Glen Mary. If that differential had been maintained the rate from Group 38 would be $5.65 rather than $5.63.

TABLE 84

To Kannapolis, N.C.
Percentage change in differentials from SRS groups

SRS Groups	January 1, 1950			Ex Parte 303 Level		
		Differential			Differential	
	Rate	Cents	% of Rate	Rate	Cents	% of Rate
Lake City #27	350	Base Grp.	Base Grp.	548	Base Grp.	Base Grp.
Pioneer #28	356	6	1.7	555	7	1.3
Jellico #29	361	11	3.0	563	15	2.7
Middlesboro #30	361	11	3.0	563	15	2.7
Glen Mary #34	367	17	4.6	571	23	4.0
Rathburn #36	367	17	4.6	571	23	4.0
Pine Knot #37	378	28	7.4	583	35	6.0
Petros #38	361	11	3.0	563	15	2.7
Dayton #39	367	17	4.6	571	23	4.0
Somerset #40	389	39	10.0	598	50	8.4
S.W. Va.(Sou)	350	–	–	548	–	–
S.W. Va.(Int)	350	–	–	548	–	–

There are many matters much more significant than freight rate differentials that determine the use of coal in the markets, such as quality of the coal, cost of the coal f.o.b. mine, air quality standards, the effect on individual mining operations of the mine safety regulations, etc. A good example of this is coal from Alabama which was at one time very strong, competitively, in the southeastern markets. Today Alabama coal is shipped almost exclusively to intrastate destinations. This change in marketing cannot be attributed to freight rate increases as the Alabama mines are accorded base group rates to the Southeastern markets.

Moreover, the dramatic increase in tonnage handled in trainload and unit train service, service not governed by differential relationships, further reduces the significance of the widened origin rate group differentials.

Another cause of disparities and distortions comes from the delays in the granting of ex parte increases on intrastate traffic. Many times this is coupled with carriers receiving less increase than approved on interstate traffic. Subsequent section 13 proceedings generally result in the carriers receiving the same increases on intrastate traffic as on interstate, but at a much later date. Examples of such proceedings are shown in Table 85 below.

TABLE 85

State	I.C.C. Docket	Ex Parte Increases Sought	Effective Date of Increases
Colorado	35480	265 and 267	February 15, 1974
Kansas	35406	259, 262, 265 and 267	October 8, 1973
Kansas	35972	281, 295, 301 and 303	Pending
Wyoming	35596	262, 265, 267 and 281	January 17, 1974
Wyoming	35899	295	Pending

Also, carriers in exercising managerial discretion have, for competitive reasons, seen fit to apply a lesser increase on some particular segment of traffic.

One distortion which has developed in the rates on bituminous coal in the East arose from the reductions in the rates on bituminous steam coal in the years 1962 through 1964. Those reductions were occasioned by the competitive conditions affecting the movement of that coal involving commodity competition of coal with natural gas and imported fuel oil, transportation competition with projected pipelines, and competition with mine-mouth generating plants and high capacity transmission lines. However, a recent upsurge in the demand for steam coal in the East has significantly reduced the cogency of these justifications.

To initial differences in the rates applicable on steam and metallurgical coal have been increased by the application of percentage increases. A comparison of the origin rates, the origin differences, the present rates and the present differences is set forth as Table 86 which compares rates for movements of metallurgical coal to the plants of the Bethlehem Steel Company with rates for the movement of steam coal from the same origin districts to utility plants in the same destination rate groups.

One disparity of note is the difference in the authorized general increases applied to different coal movements. One reason authorized increases are not applied is the existence of a previously negotiated escalation agreement, particularly with regard to unit-train movements.

TABLE 86

Comparison of rates on metallurgical and steam coal and the amounts of the increases since Ex Parte No. 259

	METALLURGICAL COAL			STEAM COAL			
	Rates in Cents Per Ton*			Rates in Cents Per Ton*			Diff. in Increases
	X-259	10%	Increase	X-259	10%	Increase	
			Clearfield District				
Baltimore Piers	392	633	241	317	514	197	44
**Bethlehem, **Martins Creek, Pa.	431	690	259	356	574	218	41
Buffalo, N.Y.	416	667	251	321	516	195	56
			Fairmont District				
Baltimore Piers	416	667	251	341	550	209	42
**Bethlehem, **Martins Creek, Pa.	454	724	270	379	612	233	37
Buffalo, N.Y.	431	690	259	336	541	205	54

* - Does not include the surcharge named in the X-301 tariffs.

** - These points are in the same destination group as defined by the single-car rates.

Rates Include: X-281B – 20¢ Max.
X-295A – 15¢ Max.
X-299A – 2.8%
X-303A – 4%
+ 10%

Finally, because the coal freight rate structure has developed with mine grouping, mine group differentials, and destination grouping, in many instances a disparity exists between the rates and the distance over which service is being provided.

First, to illustrate the measure of mine group differentials, we have set forth the single-car rates on fine coal from Southern Railway and L&N mine groups to Kannapolis, N.C. Since we are dealing merely with group differentials, average distances from each group were developed for this comparison. The present rates at the Ex Parte No. 303 level and average distances from the mine groups are set forth in Table 87. This table also contains the earnings per ton-mile, ranging from 12.3 mills from L&N Harlan Group 4 to 17.2 mills from Southern Railway base group of Lake City. In addition, the mines in Southwest Virginia on Southern Railway and the Interstate Railroad carry the same rate as Lake City although the distances involved from Southwest Virginia are greater. The distances from Southern's Middlesboro group and Interstate's Southwest Virginia group are the same, but a rate of $5.63 applies from the former and $5.48 from the latter.

TABLE 87

Single-car fine coal rates and distances to Kannapolis, N.C, from Southern railway system and L&N groups

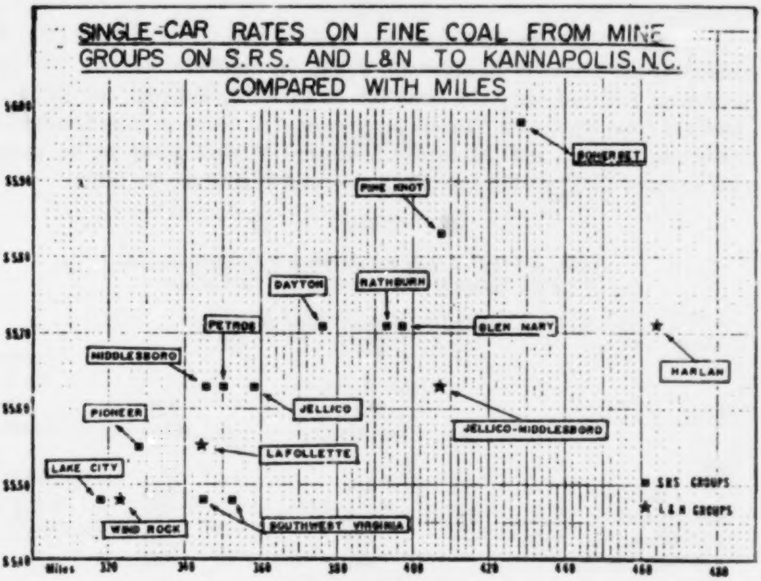
(Rates/Per Ton At X-303 Level)

Group	Miles (Average)*	Rate (Cents)	Earnings Per Ton Mile (Mills)
SRS:			
#27 Lake City	318	548	17.2
#28 Pioneer	328	555	16.9
#29 Jellico	358	563	15.7
#30 Middlesboro	345	563	16.3
#34 Glen Mary	397	571	14.4
#36 North Chattanooga	393	571	14.5
#37 Pine Knot	407	583	14.3
#38 H&NF	350	563	16.1
#39 Dayton	376	571	15.2
#40 Somerset	428	598	14.0
S.W. Va. (Sou)	352	548	15.6
S.W. Va. (Int.)	345	548	15.9
L&N:			
# 1 Wind Rock	323	548	17.0
# 2 La Follette	344	555	16.1
# 3 Jellico-Middlesboro	411	563	13.7
# 4 Harlan	464	571	12.3

* - Average miles from all tariff origins in mine group.

When these rates are plotted on a graph they show the picture depicted in Figure AC. It can be seen that the rates from L&N origin mine groups, with the exception of equalization between Wind Rock, Lake City, and Southwest Virginia, are on a lower level when compared with mileage than those rates from Southern Railway origin mine groups. It should be kept in mind that this chart does not show the size of the mine groups involved, but merely illustrates, based on average miles from each group, the effect of existing mine group differentials.

FIGURE AC



Another peculiarity of the existing rate structure on coal is the different sizes of the various mine groups. Some groups have only one or two active mines and are small in geographical scope. On the other hand, the C&O Big Sandy group has one hundred tariff origins and includes distances slightly in excess of one hundred miles. The closest mine origin to C&O's connection with the C&O at Elkhorn City, on the south end of the group, is Dunleary, Ky., one mile from the point of interchange. The most distant origin point is Vail, Ky., 105 miles from Elkhorn City.

The effect of origin and destination grouping is shown by an analysis of actual coal movements from the Big Sandy District to destinations in North and South Carolina and Virginia for the period March, April, and May 1973.

This involved coal moving on single-car rates to thirty-seven destinations. The actual points involved, distances, and rates at the Ex Parte No. 303 level are set forth in Table 88.

The actual 1973 movements were re-rated to bring the rates up to a current level. The distances shown are actual-movement miles where the shipments were routed over the short tariff route. Where the actual-route miles exceeded the short tariff distances, the latter were used. The destinations have been arranged in mileage order and it can be seen that the effect of origin and destination grouping is to create a rate structure which does not have a constant progression as distances increase.

TABLE 88

Single-car rates and distances on coal from C&O Big Sandy to North Carolina, South Carolina and Virginia destinations

(Rates in Cents Per Ton)
*(Ex Parte No. 303 Level)**

From	To	Distance	Rate
Thealka, Ky.	Spruce Pine, N. C.	249	490
Virgie, Ky.	Skyland, N. C.	257	526
Big Shoal, Ky.	Skyland, N. C.	259	526
Boldman, Ky.	Skyland, N. C.	264	526
Harold, Ky.	Skyland, N. C.	266	526
Gabriel, Ky.	Enka, N. C.	271	523
Salisbury, Ky.	Roanoke, Va.	272	608
Salisbury, Ky.	Asheville, N. C.	276	523
McDowell, Ky.	Asheville, N. C.	284	523
Price, Ky.	Roanoke, Va.	284	608
Ligon, Ky.	Biltmore, N. C.	294	523
Kilowatt, Ky.	Pisgah Forest, N. C.	301	557
Martin, Ky.	Hildebran, N. C.	302	552
Deane, Ky.	Roanoke, Va.	309	608
Regina, Ky.	Yadkin, N. C.	330	596
Salisbury, Ky.	Statesville, N. C.	342	582
Regina, Ky.	Winston-Salem, N. C.	350	608
Salisbury, Ky.	South Boston, Va.	375	661
Boldman, Ky.	Lancaster, S. C.	381	596
Harold, Ky.	Lancaster, S. C.	383	596
Kilowatt, Ky.	Lancaster, S. C.	386	596
Salisbury, Ky.	Winston-Salem, N. C.	393	608
Martin, Ky.	High Point, N. C.	399	596
McDowell, Ky.	Concord, N. C.	399	596

TABLE 88 (cont.)

Single-car rates and distances on coal from C&O Big Sandy to North Carolina, South Carolina and Virginia destinations

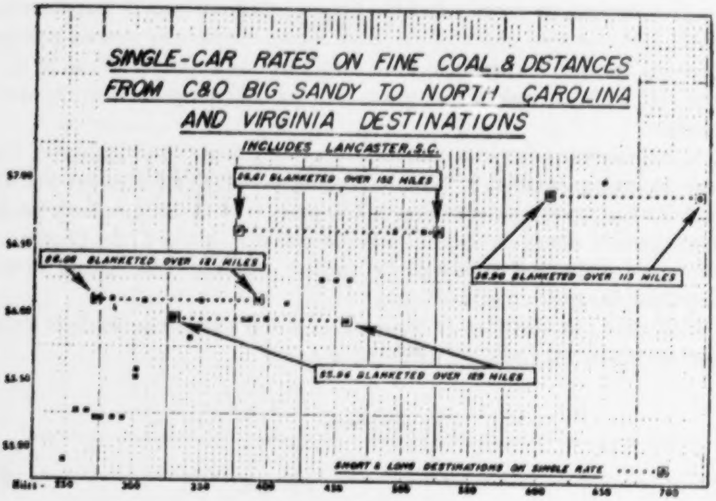
(Rates In Cents Per Ton)
*(Ex Parte No. 303 Level)**

From	To	Distance	Rate
Salisbury, Ky.	Lancaster, S. C.	400	596
Martin, Ky.	Greensboro, N. C.	414	607
Salisbury, Ky.	Burlington, N. C.	439	625
Salisbury, Ky.	Mebane, N. C.	449	625
Salisbury, Ky.	Thomasville, N. C.	459	596
Price, Ky.	Mebane, N. C.	461	625
Paintsville, Ky.	Wagram, N. C.	493	661
Martin, Ky.	Raleigh, N. C.	495	661
Ligon, Ky.	Raleigh, N. C.	516	661
Evanston, Ky.	Wagram, N. C.	527	661
Paintsville, Ky.	Farmville, N. C.	609	690
Martin, Ky.	Ahoskie, N. C.	650	700
Paintsville, Ky.	Elizabeth City, N. C.	722	690

* - Subject to Ex Parte No. 301 Surcharge.

When we put this Big Sandy rate situation on a graph we find that some rates are blanketed over considerable mileages. The graph in Figure AD plots the actual movements and the rates at the Ex Parte No. 303 level shown in Table 88. It also shows the shortest and longest distances involving one rate. For example, it shows that a rate of $6.61 applies to a destination 375 miles from a mine in the Big Sandy group and also to a destination 527 miles from a mine in the group.

FIGURE AD



This rate situation is caused by a combination of the distances within mine groups and those within destination grouping, or equalization of rates to different destinations. The maximum variance on the origin end from Big Sandy would be 104 miles, but when the differences in origin mine group distances are coupled with those on the destination end we find the situation shown above where the $6.61 rate is blanketed over 152 miles. To illustrate, a breakdown of the distances involved in the movements on this rate is as follows:

TABLE 89

Distances of movements at the $6.61 rate to and from the Interchange Point at Elkhorn City, Ky.

	Miles		
	To Elkhorn City	From Elkhorn City	Total Distance
1.	52	323	375
2.	68	425	493
3.	49	446	495
4.	70	446	516
5.	102	425	527
Maximum Difference	53	123	152

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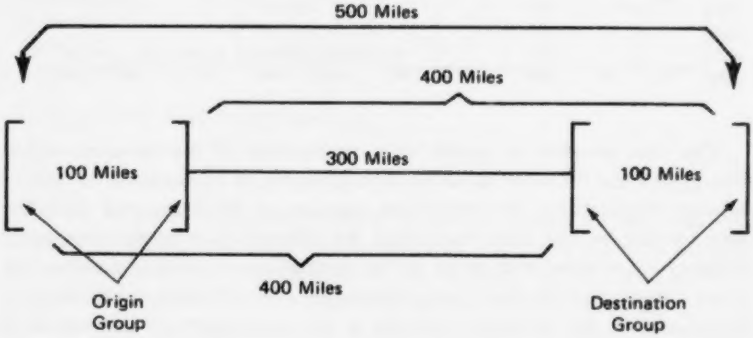
Destination groups are sometimes as large or larger than mine groups. A map of a destination group called the Coastal group is shown in Map Number XXXV, *supra*. A spot check of the cities shown on the map reveals that the rate from Southwest Virginia to all of these places is the same. As can be seen from the scale of miles, this group is over 150 miles in a north-south direction.

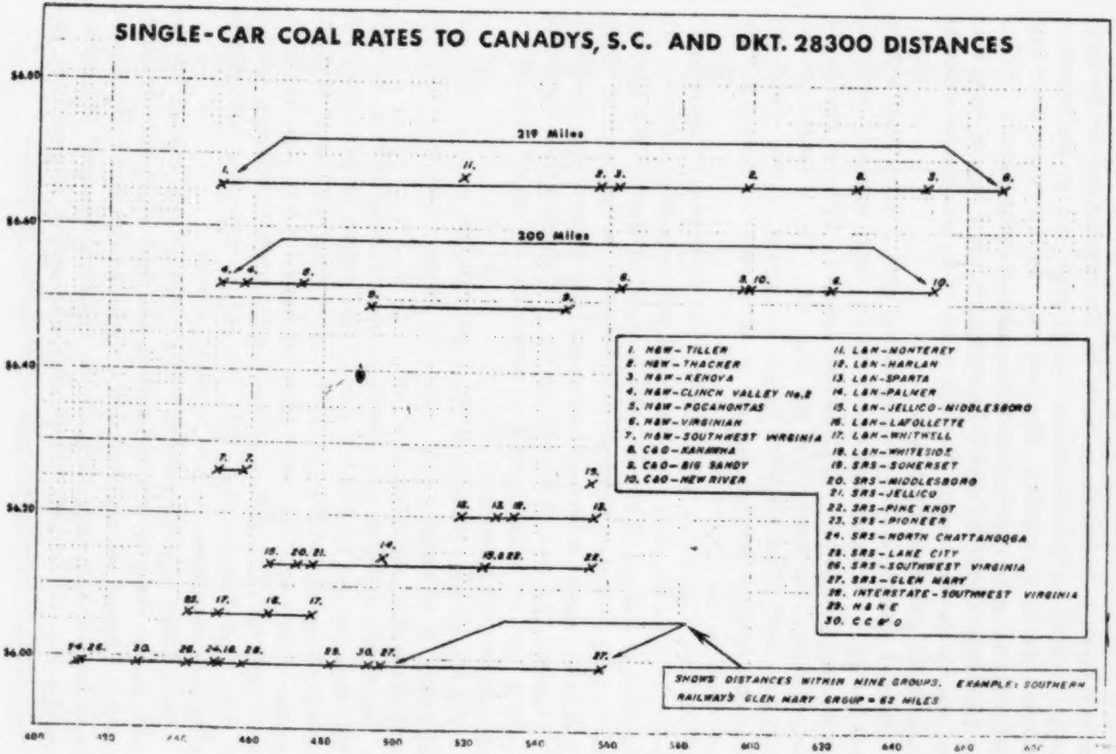
A map showing two other destination rate groups is in Figure AE. The group in which Canadys, S. C., is located is about 100 miles across and the Charlotte-Kannapolis group is almost 150 miles from one end to the other in a northeasterly direction. Lake City is the base mine group to the Charleston destination group and Southwest Virginia is the base mine group to the Charlotte-Kannapolis destination area.

With origin and destination grouping, covering wide areas, we have a rate structure which resembles the following diagram:



As another illustration of the effect of mine-grouping and mine group differentials on the single-car coal rate structure, we have set forth the rates and distances involved to Canadys, S. C., from mine origin groups on SRS, L&N, C&O, and Clinchfield Railroad. Because the task of calculating distances from each mine origin is so time consuming, we have used Docket 28300 grouping and distances, which should be sufficient for the purposes of this illustration. We selected the mine origin point in each group which appeared to represent the shortest Docket 28300 distance and that which represented the longest distance. The purpose of this showing is to get a picture of the rate situation from as many mine origin groups as possible. These are plotted on Figure AE. From this chart it can be seen that the rate of $6.66 per net ton is blanketed over 219 miles and the rate of $6.52 covers a possible 200-mile difference in distances on the origin end.

FIGURE AE



SINGLE-CAR COAL RATES TO CANADYS, S.C. AND DKT. 28300 DISTANCES

Figure AE also illustrates the distances within origin mine groups. For example, N&W Kenova (No. 3 on the graph) involves distances from 562 miles to 648 miles, or 86 miles. The 62 miles within Southern's Glen Mary group is shown as an example on Figure AE. The numbers used for the thirty groups involved are for identification on the graph and are not related to historic mine group numbers. Wherever only one number is listed that particular mine group is so small that it has only one basing point.

Admittedly, Figure AE depicts the extreme situation because lower rates are available via other routes. The same is true of the annual-volume rates to Canadys, S. C., shown in Figure AF.

Another showing involving annual-volume rates is taken from a three-month study of all movements from C&O Big Sandy to North and South Carolina interchanged with the Clinchfield Railroad at Elkhorn City, Ky. The period involved was March, April and May, 1973. The movement data was compiled from actual waybills. During this period of time there were shipments to eight destinations, two of which took the same rate. Total volume moved was 115,161 tons.

The rates at the Ex Parte No. 303 level and the short tariff distances are shown on Table 90 along with the origins and destinations. Although this statement is arranged in mileage order it cannot be expected that the rates will progress steadily with increases in distance because these rates are subject to different annual-volume requirements and other transportation conditions. For example, the rates to Skyland are the concentration rates. These rates apply in cars of 70-ton capacity or greater and are subject to a 24-hour unloading limitation period.

This rate situation is shown in Figure AG. Primarily, the chart illustrates differences in distances on the origin end because there were only two destinations which carried the same rate.

Figure AG establishes that possible variances in distances from the C&O Big Sandy are not hypothetical but actually happen in connection with movements on annual-volume rates. The rate to Pelzer, S. C., of $5.02 ($4.56 at time of movement) was protected on 77 shipments from Vail, Ky., which is 105 miles from Elkhorn City and on 54 shipments from Mikegrady which is 5 miles from Elkhorn City. Thus, the carriers performed 100 miles of additional transportation with no increase in charges.

The problem of ignoring distance when building a rate structure has long been known. However, the introduction and rapid expansion of multiple carload, trainload, and unit-train rates has greatly diminished its significance, since each of these rates disregards the differential structure. It is recommended that the carriers, through established section 5a procedures, give consideration to revising their origin and destination groupings.

FIGURE AF

ANNUAL VOLUME RATES TO CANADYS, S.C. AND DKT. 28300 DISTANCES

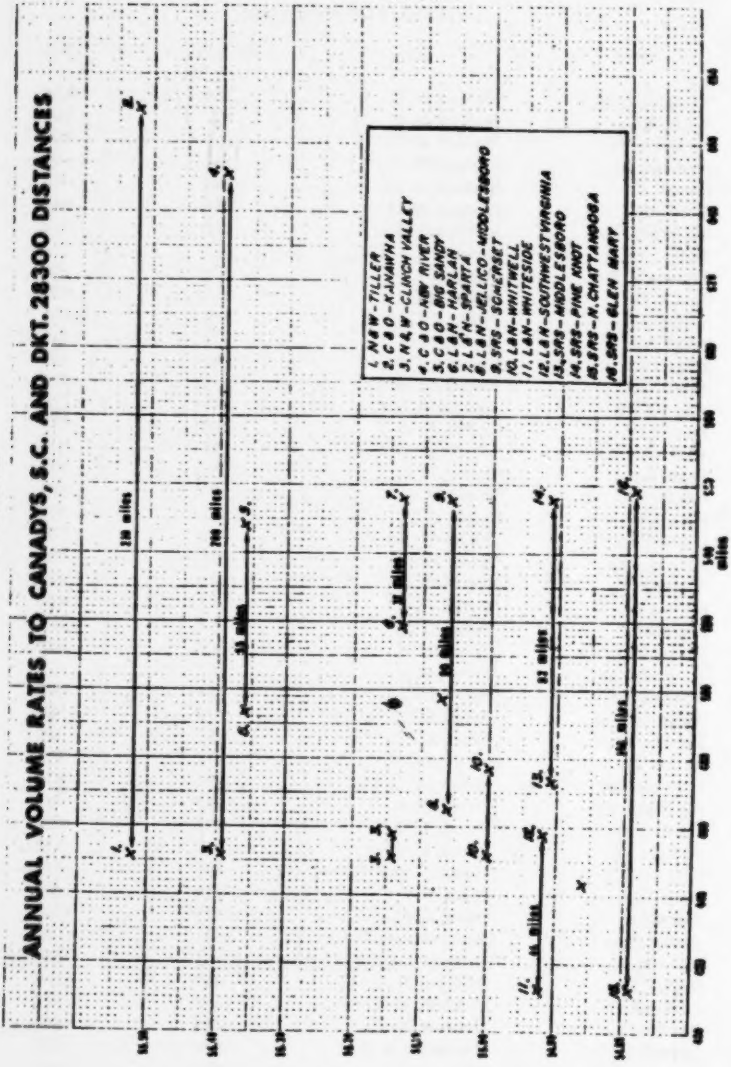
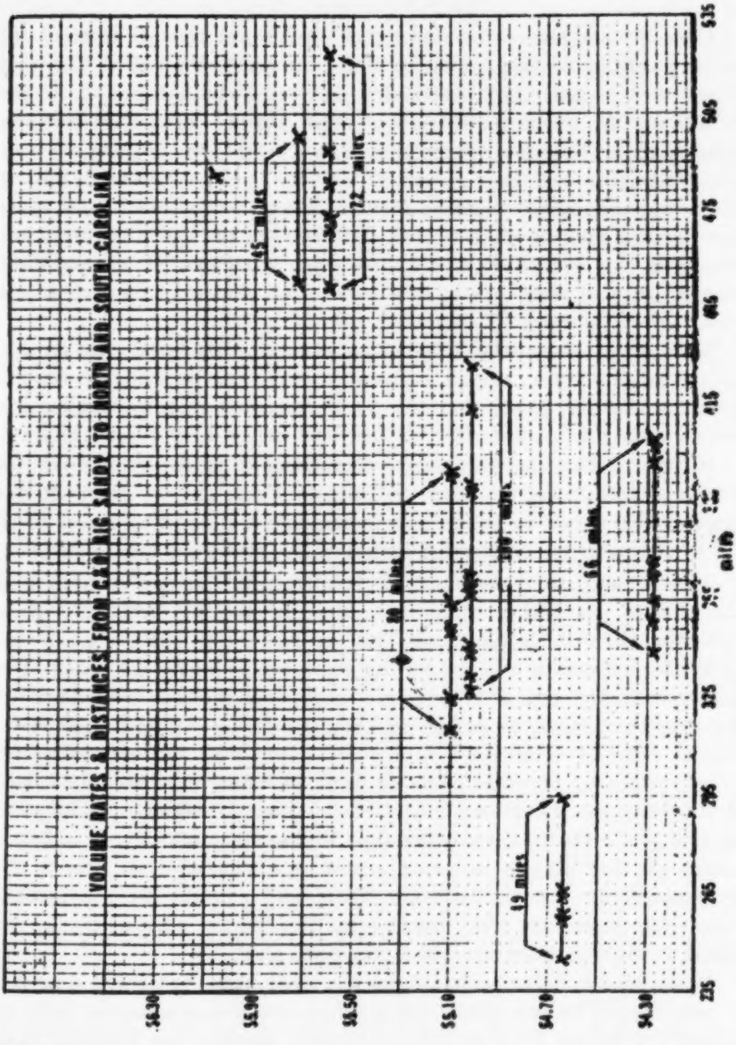


TABLE 90

Volume rates and distances on fine coal from C&O Big Sandy to North Carolina and South Carolina
(Rates In Cents Per Ton)

From	To	Distance	Rate
Henry Clay, Ky.	Skyland, N. C.	245	464
Virgie, Ky.	Skyland, N. C.	257	464
Big Shoal, Ky.	Skyland, N. C.	259	464
Boldman, Ky.	Skyland, N. C.	264	464
Harold, Ky.	Skyland, N. C.	266	464
David, Ky.	Skyland, N. C.	294	464
Mikegrady, Ky.	Riverbend, N. C.	315	510
Shelby, Ky.	Riverbend, N. C.	325	510
Mikegrady, Ky.	Pelzer, S. C.	327	502
Ratliff, Ky.	Pelzer, S. C.	332	502
Hellier, Ky.	Pelzer, S. C.	338	502
Ratliff, Ky.	Terrell, N. C.	339	428
Yeager, Ky.	Pelzer, S. C.	341	502
Harold, Ky.	Riverbend, N. C.	345	510
Hale #3, Ky.	Riverbend, N. C.	346	510
Yeager, Ky.	Terrell, N. C.	348	428
Allen, Ky.	Riverbend, N. C.	354	510
Virgie, Ky.	Terrell, N. C.	355	428
Harold, Ky.	Pelzer, N. C.	357	502
Hunt, Ky.	Pelzer, N. C.	357	502
Hale #3, Ky.	Pelzer, N. C.	358	502
Kilowatt, Ky.	Pelzer, N. C.	360	502
Boldman, Ky.	Terrell, N. C.	362	428
Dorton, Ky.	Terrell, N. C.	362	428
Rowe, Ky.	Pelzer, S. C	362	502
Betsy Layne, Ky.	Terrell, N. C.	365	428
Kilowatt, Ky.	Terrell, N. C.	367	428
Dawkins, Ky.	Pelzer, S. C.	389	502
Hager Hill, Ky.	Pelzer, S. C.	390	502
Thealka, Ky.	Pelzer, S. C.	391	502
Ivyton, Ky.	Riverbend, N. C.	392	510
Royalton, Ky.	Riverbend, N. C.	395	510
Paintsville, Ky.	Terrell, N. C.	397	428
Thealka, Ky.	Terrell, N. C.	398	428
Victoria, Ky.	Terrell, N. C.	402	428
Rebecca, Ky.	Terrell, N. C.	405	428
Carver, Ky.	Pelzer, S. C.	413	502
Vail, Ky.	Pelzer, S. C.	427	502
Shelby, Ky.	Brickhaven, N. C.	451	560
Pikeville, Ky.	Robinston, S. C.	453	573
Regina, Ky.	Moncure, N. C.	469	560
Lookout, Ky.	Moncure, N. C.	473	560
Pikeville, Ky.	Moncure, N. C.	483	560
Gabriel, Ky.	Dunbarton, S. C.	486	606
Boldman, Ky.	Moncure, N. C.	493	560
Paintsville, Ky.	Robinson, S. C.	498	573
David, Ky.	Moncure, N. C.	523	560

FIGURE AG


VOLUME RATES & DISTANCES FROM C&O BIG SANDY TO NORTH AND SOUTH CAROLINA
$6.30
$5.90
$5.50
$5.10
$4.70
$4.30
235
265
295
325
415
445
475
505
535
miles
19 miles
80 miles
56 miles
45 miles
22 miles

PART IV – UNEVEN EFFECTS OF INCREASES ON INDIVIDUAL RAILROADS

Table 91 compares bituminous coal carried and revenue received for various groupings of class I railroads during the period 1966-1972. The table shows the wide variation in results that occurred during this period. At one extreme are the results for the seven Eastern District railroads currently in reorganization. While maintaining an almost constant level of gross revenues from bituminous coal these carriers suffered a 35-percent decline in tons of bituminous coal carried. Western District carriers, on the other hand, more than doubled their bituminous coal gross revenues and had a 34.09-percent increase in tons carried. Results for the other groupings fall between these extremes. For all class I roads, total tons carried declined 9.08 percent and gross revenues increased 23.20 percent.

Based on the above data, Table 92 presents bituminous coal gross revenue per ton carried. Again, certain extremes in results can be seen. The Eastern Bankrupts had the greatest increase, 54.54 percent in gross revenue per ton carried, while the Southern District roads had only a 22.32-percent increase.

It appears, then, that railroads have experienced uneven bituminous coal revenue effects during the 1966-1972 period. These uneven effects do not appear to be related to general rate increases, but rather they appear to be due to factors largely beyond the control of the carriers and the Commission.

An overriding factor that must be considered is the establishment of local and national air quality standards during the period, specifically those restricting sulfur oxide emissions. This had had a dramatic impact on the market for bituminous coal and its flow through the national rail system. The Eastern Bankrupts appear to have been particularly affected. The bulk of the coal mined and consumed in their market area prior to 1966 had a high sulfur content. After 1966 residual fuel oil could be imported and desulfurized (or low sulfur residual could be imported directly), having been exempted from oil import quotas into the East Coast. While residual oil imports rapidly grew, rail coal traffic for the Eastern Bankrupts declined precipitously. In addition, natural gas also became increasingly used as a substitute for coal to the detriment of the Eastern Bankrupts. Faced with a rapidly declining market these roads were only able, despite large general rate increases during the period, to maintain gross revenues at a constant level.

Roads in the Western District, on the other hand, benefitted from the growing market for low sulfur coal and the inability of residual fuel oil to be competitive in the West and Midwest utility market. The situation these carriers faced was the exact opposite of that facing the Eastern Bankrupts.

Differences in the increases in gross revenue per ton for various groupings appear to also be related to the changing market situation for coal. The

TABLE 91

Total tons carried and gross revenues of bituminous coal - Class I railroads, 1966-1972*

	Eastern Bankrupts**		Other Eastern		Southern District		Western District		Total U.S.	
	Total tons carried	Gross revenues	Total tons carried	Gross revenues	Total tons carried	Gross revenues	Total tons carried	Gross revenues	Total tons carried	Gross revenues
1966	153,227,737	244,651,558	283,141,359	579,147,981	129,304,690	191,142,467	59,483,925	90,595,589	625,157,711	1,105,537,595
1967	149,557,166	244,755,768	284,247,692	595,969,698	140,917,385	200,171,337	57,977,408	89,329,384	632,699,651	1,130,226,187
1968	127,329,809	230,859,627	281,436,905	600,262,079	133,772,996	195,046,037	59,196,357	90,990,101	601,736,067	1,117,157,844
1969	126,335,759	239,076,085	276,214,636	612,567,036	141,759,097	219,403,961	64,464,779	100,207,163	608,774,271	1,171,254,245
1970	122,795,197	262,003,760	283,974,877	700,087,553	155,189,723	263,837,005	72,774,534	136,022,135	634,734,331	1,361,950,453
1971	102,843,539	243,314,460	229,374,300	635,074,997	151,042,262	270,209,654	71,852,232	166,237,599	555,112,363	1,314,836,710
1972	99,598,428	245,755,666	235,121,900	653,625,046	153,918,674	278,313,473	79,760,264	183,904,782	568,399,266	1,361,548,967
Percent change 1966-72	-35.00	+40.45	-16.96	+12.86	+19.04	+45.61	+34.09	+103.00	-9.08	+23.20

*Includes duplications.

**Eastern Bankrupts are: Ann Arbor R.R., Boston & Maine Corp., Central R.R. Co. of New Jersey, Erie Lackawanna Railway, Lehigh Valley R.R., Penn Central Transportation, and the Reading.

TABLE 92

Bituminous coal gross revenue per ton carried, 1966-1972

	Eastern Bankrupts	Other Eastern	Southern District	Western District	Total U.S.
1966	1.5967	2.0454	1.4782	1.5230	1.7684
1967	1.6365	2.0967	1.4205	1.5408	1.7864
1968	1.8131	2.1328	1.4580	1.5371	1.8566
1969	1.8924	2.2177	1.5477	1.5544	1.9240
1970	2.1337	2.4653	1.7001	1.8691	2.1457
1971	2.3659	2.7687	1.7890	2.3136	2.3686
1972	2.4675	2.7799	1.8082	2.3057	2.3954
Percent change 1966-72	+54.54	+35.91	+22.32	+51.39	+35.46

expanding market for low sulfur Western coal in the Midwest brought about longer hauls for this coal and thereby higher gross revenue per ton. The large increases in gross revenue per ton for the Eastern Bankrupts may be due to a decline in the use of unit trains as the level of coal traffic contracted. Another consideration may be the shift in coal production from Pennsylvania to the Southern Appalachian area where low sulfur coal can be produced, which necessitated a longer haul.

In any event, it is difficult to ascribe "uneven effects" to general rate increases on coal during this period. Nationwide these increases appear to be generally comparable for all roads. Because of a changing market for coal, however, each road appears to have experienced significantly different revenue results.

PART V – RAILROAD SERVICE

Part V of the Coordinator's order of October 30, 1973, asked the parties to submit any evidence bearing on the issue whether general increases in freight rates have provided sufficient revenues to induce the railroads to undertake improvements in service to meet the requirements of shippers of coal; and whether the railroads, in seeking general increases in freight rates, have taken into account variations in coal service being provided shippers. In general, the evidence submitted indicates that the answers to both of these questions are in the negative.

At the time the Coordinator issued his order of October 30, 1973, the Commission already had instituted a proceeding in Ex Parte No. 270 (Sub-No. 2), entitled "Investigation of Railroad Freight Service", which is now pending. It was not intended that Part V of the Sub-No. 4 investigation into the freight rate structure on coal be duplicative of the more comprehensive service investigation in Sub-No. 2. It was the Coordinator's purpose to give shippers of coal and other interested parties an opportunity in this proceeding to express views in connection with freight service on coal within the framework of the issues presented.

In Table 93 are set forth the general freight rate increases authorized by the Commission beginning with Ex Parte No. 256 through Ex Parte No. 295 on commodities generally and those increases authorized generally on coal.

TABLE 93

		Increases		
Ex Parte Increase (1)	Effective Date (2)	Commodities Generally (3)	Bituminous Coal (4)	
X-256	8-19-67	(1) ½¢ 100 lbs.	Where Rate Is:	Increase
		(2) 1¢ 100 lbs.	50¢ per ton or less	5¢ per ton
		(3) 2¢ 100 lbs.	Over 50¢ and not over $1.00 per ton	10¢ per ton
		(4) 3¢ 100 lbs.	Over $1.00 per ton	15¢ per ton
X-259	11-28-68	3% to 10%	5% Max. 15¢ per ton	
X-262	11-18-69	6%	(5) 6%	
X-265-A	6- 9-70	*5%	* 5% Max. 18¢ per ton	
X-265-B	11-20-70	6%	4% Max. 15¢ per ton	
X-267-A	11-20-70	6%	6%	
X-281	2- 5-72	*2½%	* 2½%	
X-281-B	10-23-72	4%	4% Max. 20¢ per ton	
X-295-A	8-19-73	3%	3% Max. 20¢ per ton	

* - Interim Increase
(1) - On rates not exceeding 10 cents
(2) - On rates over 10 cents but not exceeding 30 cents
(3) - On rates over 30 cents but not exceeding 80 cents
(4) - On rates over 80 cents
(5) - Certain movements made subject to 3% increase

The increases sought by the railroads since Ex Parte No. 256 on coal have generally been the same as on other commodities and have been percentage increases. Except possibly to the limited extent the railroads did not apply the approved increases on certain movements of coal, the carriers did not take into account variations in coal service provided shippers.

The railroads state that their primary and principal purpose in general increase proceedings (ex parte cases) was to obtain revenues to partially offset increases in expenses which carriers have incurred, rather than to provide revenues for the purpose suggested by the issue herein presented. In fact, in all ex parte cases since Ex Parte No. 256, except Ex Parte No. 267 and Ex Parte No. 305, the carriers sought (and obtained) less revenue relief than their increased expenses were shown to justify.

In Ex Parte No. 267 the Commission undertook to raise the level of rail earnings, authorizing increases in freight rates which it calculated were required to produce rates of return on net investment approaching 6 percent in each territory. While the authorized return was similar to that authorized in an earlier proceeding in 1948, Ex Parte No. 166, its relationship to the cost of money was quite different. Whereas new equipment obligations issued in 1948 carried an average nominal rate of 2.4 percent, the average rate of such obligations in 1971, when the report in Ex Parte No. 267 was issued, was 7.31 percent. The Commission recognized that appreciably higher returns (than 6 percent) could not be held unreasonable under economic conditions now prevailing but that rates of 6 percent on net investment and 8 percent on equity were rates which railroads "must make every effort to attain if they are to be in a position to provide the improved services which will be needed in the future." ***Increased Freight Rates, 1970 and 1971,*** 339 I.C.C. 125, 182.

However, owing in part to cost inflation, the objective of substantially improved earnings was not attained. Net earnings increased in 1972 and 1973, but only slightly. In the South and West, where all-time record freight volume was handled, gross revenues moved to new highs but net earnings barely matched those of the early 1950's when the dollar was worth much more and cost much less to borrow. It is still too early to tell what effect Ex Parte No. 305, Nationwide Increase of Ten Percent in Freight Rates and Charges, will have on the service performed by the Nation's railroads.

Coal is the leading commodity, as to tonnage and revenues, loaded in open top hopper cars. As can be seen in the table below, since 1950 the number of these cars has declined about 38 percent while aggregate capacity has declined almost 18 percent.

The decline in aggregate capacity was less than the decline in the number of cars because of the increase in average car capacity from 57.60 tons to 76.57 tons - an increase of almost 25 percent. This trend appears to be continuing with many newly built cars having 100-ton capacities. Since 1954, tons per car of coal originated by Southern District lines have increased 48 percent, as shown below.

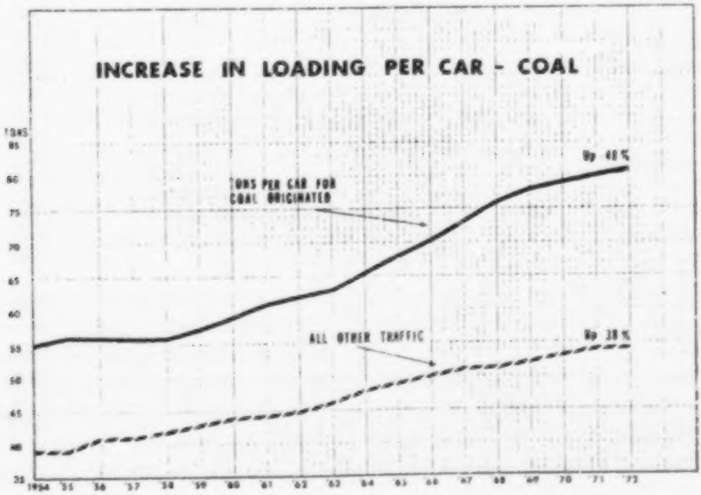
At the beginning of 1973, the Chessie System had 20,000 coal cars idle. At an average value of $10,000 per car, this represented a total value of $200

TABLE 94

Hopper car ownership aggregate carrying capacity and the average capacity per car in tons - class I U.S. railroads

Date		Ownership	Aggregate Cap. Tons	Average Carrying Cap. Tons.
January	1950	573023	33006125	57.60
January	1955	537154	31396651	58.45
January	1960	490020	29420801	60.04
January	1961	484004	29323386	60.58
January	1962	465342	28246259	60.70
January	1963	443784	27319343	61.56
January	1964	434516	26957373	62.04
January	1965	434234	27723520	63.84
January	1966	428566	27932722	65.18
January	1967	428970	28684905	66.87
January	1968	419298	28680366	68.40
January	1969	410508	28756183	70.05
January	1970	394204	28207421	71.56
January	1971	388492	28318724	72.89
January	1972	386482	28758513	74.41
January	1973	373136	28350873	75.98
January	1974	354608	27152335	76.57

FIGURE AH



million. The idleness of coal cars was caused largely by users of coal switching to other energy sources such as oil.

Because of an unprecedented and unanticipated surge in coal demand created largely by shortfalls of other energy sources, a serious shortage of coal cars has developed. The table below shows that this shortage began in February 1973 and has continued to the present.

TABLE 95

Average daily hopper car shortage - class I U.S railroads

Period Ending	Car Shortage
Jan. 5, 1963	-0-
Jan. 4, 1964	48
Jan. 2, 1965	41
Jan. 1, 1966	71
Jan. 7, 1967	34
Jan. 6, 1968	62
Jan. 4, 1969	11
Jan. 3, 1970	305
Jan. 2, 1971	286
Jan. 1, 1072	21
Jan. 6, 1973	63
Feb. 3, –	993
Mar. 3, –	2189
Apr. 7, –	2363
May 5,	2674
June 2, –	2991
July 7, –	1588
Aug. 4, –	2415
Sept. 1, –	2577
Oct. 6, –	2366
Nov. 3, –	2672
Dec. 1, –	1466
Jan. 5, 1974	1376
Feb. 2, –	2096
Mar. 2, –	3471
Apr. 6, –	4094
May 4, –	5908
June 1, –	5584
June 15 –	6697

The energy crisis and the avowed purpose of this nation to remove itself from dependence on foreign sources to meet energy requirements, has resulted in a flood of in-depth analyses of energy needs for the remainder of this century. Although the forecasts may vary in specific consumption figures, one central theme runs throughout all the studies: coal is the only fuel available in this country with long term reserves, and the one fuel to be relied on over the next 10-15 year period.

Coal production in the United States reached its peak in 1947 when 630.6 million tons were produced. The only other year exceeding 600 million tons was 1970—602.9 million tons. Production in 1973 was 591 million tons.

While the forecasts for the demand for coal vary by source, there is a strong consensus that future production of coal will and must climb by many millions of tons.

The following tabulation shows forecasts for the demand for coal made by various institutions for the years 1975, 1980 and 1985:

TABLE 96

	Forecast in millions of tons		
Source	1975	1980	1985
1	713.0	845.0	1,001.0
2	615.0	850.0	1,000.0
3	636.0	740.0	980.0
4	733.3	855.5	1,075.4
5	754.0	1,134.0	1,708.0
6	670.0	830.0	920.0

Source 1 – U.S. Energy Outlook - An Initial Appraisal 1971-1985 - National Petroleum Council
Source 2 – U.S. Energy - A Summary Review - Dept. of Interior
Source 3 – U.S. Energy - Through year 2,000 - Dept. of Interior
Source 4 – Understanding the Energy Dilemma - Center of Strategic and International Studies for Atomic Energy Commission
Source 5 – Batelle Memorial Institute
Source 6 – U.S. Bureau of Mines - L. Westerstorm

In March 1974, the Department of Interior published a revised estimate of about 2 billion tons in 1985, or 3.3 times the 1972 production and a doubling of coal production by 1980.

Having acknowledged the increasing demand for coal it is less clear where this growth will take place. The Department of the Interior has decided upon two possible "strategies" to meet the future needs for coal. "Strategy 1" would have the nation place heavy reliance on surface mining to achieve the stated objectives; "Strategy 2" balances the increased production between regions and mining methods. After 1980, under "Strategy 2," heavier reliance would be placed on underground development in both the West and the East, with underground development in the East doubling to 600 million tons by 1985. The Department has assumed that Strategy 2 is "the more probable course for expanded coal production."

This examination of the future course of coal production and the level of coal traffic briefly analyze the political, technological and economic factors which are expected to be the prime determinants of whatever "strategy" that may develop. The focus of this analysis is on the immediate period ahead 1975-1980.

Of the public policy factors relating to coal the two having the most profound influence on the transportation of coal are the enforcement of air quality standards, specifically the control of sulfur oxide emissions, and surface mining regulations.

In the implementation of the Clean Air Act Amendments of 1970 by the Environmental Protection Agency, EPA, a number of specific standards and regulations have been promulgated. National ambient air quality standards have been established by EPA on the basis of primary standards (to protect public health) which statutorily must be met by 1975; and secondary standards (to control other undesirable effects) which must be met within a reasonable time thereafter. Primary standards for sulfur oxides are set at an annual average (arithmetic mean) of 80 micrograms per cubic meter of air; secondary standards for sulfur oxides are set at an annual average of 60 micrograms per cubic meter. In addition, emission performance standards have been established for various categories of new sources, including fossil fueled steam generating plants. Standards for these plants require that, for new coal burning plants going into operation before 1975, no more than 1.2 pounds of sulfur oxides can be emitted per million BTU heat input. For new oil burning plants going into operation before 1975 no more than 0.8 pounds of sulfur oxides can be emitted per million BTU heat input. These emission standards would apply to all plants after 1975. It should be noted that as the heat content of the coal decreases, the sulfur content must decrease proportionately in order to meet the standard. The standards are equivalent to about 0.72 percent sulfur for Appalachian coal which has an average BTU content of 12,000 BTU per pound, and about 0.48 percent sulfur for western coal which has an average of 8,000 BTU per pound. The Clean Air Act also requires the states to develop air pollution control implementation plans which must be reviewed and approved by EPA. Many States have established sulfur emission standards of less than 0.67 pounds of sulfur per million BTU's. Apparently most of the States' implementation plans call for the secondary air quality standards to be met by 1975 as well as the primary (health-related) standards.

Controls on sulfur oxide emissions have already been in effect in some localities for several years. Starting in 1964 New York and other northeastern cities established sulfur limits which forced the use of low sulfur fuels for burning. Low sulfur coal was available at premium prices or with high transport costs, but after 1966 residual fuel oil could be imported and desulfurized (or low sulfur residual could be imported directly), having been exempted that year from oil import quotas into Petroleum Administration District I, East Coast. Consequently, imports of residual into the East Coast rose from 274 million barrels in 1964 to 555 million barrels in 1971. At the same time Penn Central's East Coast coal traffic dropped some 33 million tons, of which about 28 tons has been attributed to displacement of coal by oil and five million tons to displacement by natural gas.

Recently both the House and the Senate have passed different versions of a bill (HR 14368) which would tend to modify the implementation of clean air standards. The legislation is intended to ease conversions of coal by electric utilities necessitated by the energy crisis while continuing measures to protect public health. The Senate version would empower the EPA Administrator to permit plants converted to coal during the 90-day period ending December 15, 1973, or plants ordered converted to coal by the Federal Energy Administrator to continue to burn coal until January 1, 1979 as long as primary (health related) air quality standards are not violated. It also would require that before continued use of coal is permitted the plant operators must agree to enter into long term contracts for low sulfur coal or to install continuous emission reduction equipment (scrubbers).

The practical possibilities of meeting ambient air quality standards by emission performance standards during the 1974-1980 period are remote. Shortages of oil and natural gas will make it necessary to convert as many electric utilities as feasible from oil and natural gas to coal. Several methods have been proposed to get around the sulfur problem: stack-gas scrubbers, conversion of coal to low BTU gas, and conversion of high sulfur coal to sulfur free coal or oil. None of these are commercially practicable at present. Industry spokesmen have suggested that the only workable solution to this problem is the use of "intermittent controls." Essentially, this would permit power plants and other fossil-fueled operations to meet air quality standards, but not emission controls, by shutting down if pollution builds to illegal levels because of wind or weather conditions.

As noted above, the regulation of surface mining is the second of the two major public policy factors influencing the transportation of coal.

Although strip mining first started before World War II, it did not become a significant type of coal mining until the early 1960's. In 1972, approximately 46 percent of total U.S. production was strip mined. Strip mining generally offers mine operators several advantages over deep mining: it requires less time and capital to open a strip mine; operating costs are lower; less specialized labor is required; and recovery is far higher – 80 to 90 percent versus 50 percent for deep mining.

While strip mining may be more efficient, many people are convinced that it leaves the land scarred and unusable for many years thereafter. The coal industry has made concerted and apparently successful efforts in some cases to restore and reclaim stripped land. Environmentalists note, however, that less than half of U.S. land previously stripped for coal has ever been reclaimed. In recent years there has been continuing pressure at the State and Federal level to enforce proper reclamation where mining is allowed, and to ban current damaging surface mining practices where proper reclamation is not possible.

Legislation currently before the Congress would place stringent controls on strip mining. Provisions of the House version of this legislation include the following restrictions:

- the operator must restore land to the "approximate original contour" with all highwalls and spoil piles eliminated. "Approximate original contour" is defined as surface configuration achieved by backfilling and grading so that it closely resembles the surface configuration of the land prior to mining and blends into and is in accordance with the drainage pattern of the surrounding terrain. Topsoil, or other strata more suitable for vegetation must be segregated, preserved and restored as the top layer of the reclaimed land,

- on slopes of more than 20 degrees, no spoil may be placed on the downslope except for a limited cut in a specific area.

Estimates of the effects of the proposed federal legislation on strip mining vary widely. Estimates of maximum production loss range from 60 to 300 million tons a year. While production effects are difficult to determine two other effects appear to be clearer. First, the requirement for thorough reclamation will increase the cost of mining depending on terrain, soil, mining method and climate. Secondly, it is generally thought that reclamation is more feasible and less costly in rolling or flat land, than for contour mines in mountains or hilly terrain. This would imply a shift in strip mine operations to the mid-west and western fields. However, the lack of adequate water in some western areas together with the problem of restoring the original contour after removing large seams from areas with a small amount of overburden will limit the extent of this shift to the West. From a reclamation standpoint the Middle West appears to be the best area for strip mining since it has generally flat terrain and ample rainfall.

The long run impact on U.S. production of the restriction on mining steep slopes may be minimal since the strippable reserves on slopes greater than 20 degrees apparently is not very significant. Approximately 15 percent of total U.S. coal production is now strip mined on these slopes.

An important aspect of this situation is the drive to increase production of low sulfur coal. The bulk of the coal now being strip mined in the West and on the steep slopes of Appalachia is low sulfur coal. A relaxation of sulfur oxide emission standards would significantly slow the expansion of strip mining.

Also legislation has been introduced into the Congress to grant pipeline companies, under certain conditions, condemnation rights in the transportation of coal. There are several coal slurry pipelines in the planning stage. The most advanced project is a 1,030-mile line linking Wyoming mines to electric generating plants in Arkansas, Louisiana, and Mississippi.

The uncertainty surrounding the above public policy issues is but one set of deterrents limiting the expansion of coal production. Among other deterrents are a hesitance on the part of many large volume consumers to execute long-term contracts which are necessary to secure markets for the 20- to 30-year lifespans of new mines; doubts regarding competitive relationships with other energy sources during such lengthy periods, including the potentials for nuclear power generation and oil imports; price control possibilities; and potentials for technological changes that could significantly alter production, distribution, and utilization patterns of coal within the lifespan of large new mines. Another important deterrent to the expansion of coal production, which is of particular interest to the Commission, is the capacity of the rail system. It is alleged that the current acute shortage of hopper cars is already serving as a major bottleneck to expanded coal production in certain areas. Despite these deterrents, however, there seems to be no doubt but that the demand for coal will increase, simply because of our present and doubtless continuing energy crisis.

The Southern District railroads estimate that rail tons originated in Southern District will increase 27 million tons by 1980 over that originated in 1973; that to move this additional coal would require an additional investment in coal carrying cars of $225,295,840, based on 1973 costs; and that conservatively, based upon unit-train operations, 99 new locomotives would be needed to move this coal requiring an investment of $34,650,000 at constant 1973 dollars. In addition to the investment for new equipment to handle expanded coal production, it is estimated that 27.4 percent of present coal hopper car capacity of Southern District railroads will be retired by the end of 1980 requiring an investment of $244,320,130 in constant dollars. These carriers point out that AAR rules require that by January 1, 1980, rolling stock in excess of 40 years old cannot be interchanged among railroads. Present regulations permit equipment less than 50 years old to be interchanged. In summary the Southern District railroads estimate that a total of $504,265,970 in new equipment will be needed by 1980, including funds for rolling stock and locomotives to meet expanded production, and equipment to replace retired hopper cars. This amount is based on constant 1973 dollars and makes no allowance for interest payments for funds expended or increased costs of cars and locomotives.

The future demand for rail coal transportation and the required investment for coal carrying equipment will have a direct impact on rail service and the level of rail coal rates. Accordingly, we have made an estimate of this demand and the required investment based on a recent Bureau of the Mines forecast of coal production through 1980– *Mineral Industry Surveys,* "Assessment of the Impact of Air Quality Requirements on Coal in 1975, 1977, and 1980," January 1974. The forecast assumes that production in coal producing districts by methods of mining (surface and underground) and by sulfur levels generally will be similar to current methods and levels. It also reflects a careful analysis of demand projections for various coal consumers, including coal requirements for new coal-fired power plants, increased low sulfur coal production in the West, and a reduction in production in some high sulfur coal areas east of the Mississippi River. The Bureau of Mines expects total U.S. production of coal will reach 839 million tons by 1980, which approximates four of the six forecasts set forth in Table 96, *supra.*

Based on this forecast we estimate that rail originations will increase to approximately 548 million tons by 1980, as set forth in Table 97, below. To meet the period 1974-1980 demand for rail coal transportation a total investment in coal carrying hopper cars and associated locomotives, we estimate that it will require $3.06 billion in constant 1974 dollars and $3.59 billion in current dollars.

TABLE 97

Estimate of U.S. bituminous and lignite coal production and rail originations, 1974-1980
(in thousands of short tons)

	1974	1975	1976	1977	1978	1979	1980
Production							
Total U.S.	643,584	670,000	700,383	727,000	764,902	803,196	839,000
Eastern District	393,064	405,260	415,741	425,630	438,417	449,756	457,860
Southern District	166,884	171,740	179,133	184,370	191.381	199,036	207,140
Western District	83.636	93,000	105,509	117,000	135,104	154,404	174,000
Rail Originations							
Total U.S.	405,710	423,983	445,741	464,831	492.504	520,840	547,922
Eastern District	220,625	227,471	233,354	238,905	246,082	252.446	256,995
Southern District	112,165	115,428	120.397	123,917	128,629	133,774	139,221
Western District	72,920	81,084	91,990	102,009	117.793	134,620	151,706

Source. Production estimates for 1975, 1977, and 1980 from Bureau of Mines, "Assessment of the Impact of Air Quality Requirements on Coal in 1975, 1977, and 1980," in *Mineral Industry Surveys,* January 1974. Other years interprolated. Rail originations based on ratio of rail originations to production for each district in 1972.

Major assumptions used in this estimate are:

- that the growth trend in average loading per car since 1965 will continue through 1980
- that average trips per year for hopper cars will increase slightly to 26 by 1980
- that equipment costs will increase 5 percent per year during the period and that the average cost for hopper cars in 1974 is $20,000 and for locomotives $336,364
- that 5 locomotives will be required per 100 car train set
- that the ratio of rail originations to production for each district will remain the same as that existing in 1972.

Our estimate includes a 3-percent equipment retirement factor but does not include the necessarily large investments for rail sidings into new mines. In addition to problems of source of funds, there is a shortage both of materials needed to build new cars and of production facilities.

In light of the current energy crisis and regardless of whether the present critical demand for coal is of short, moderate, or long duration, it is essential that as the capacity of old mines is increased and additional mines are opened the capacity of the Nation's coal carrying railroads to meet these increased demands also grows. It is essential, therefore, that the railroads in establishing coal rates, whether devising new pricing arrangements, revising existing relationships, or seeking general revenue increases, give priority to generating sufficient revenues to support investment in the needed facilities and give guarantees to the Commission that the required equipment will be obtained when such rate increases are sought. Priority must be given to the funding and building of rail equipment if the public interest in meeting the Nation's growing energy needs is to be met. It is in the public interest that steel companies and builders of rail equipment give special consideration to producing the equipment needed to move coal. It is one thing to have new equipment "on order" and something quite different to produce the equipment and put it in actual operation. It is by no means certain that the coal carrying railroads as a group have the financial resources necessary to begin immediately to purchase additional coal cars. Further, it is known that the coal carrying railroads vary greatly in their respective financial capacity to purchase the needed equipment.

Certainly, before management can reasonably be expected to authorize the purchase of the literally thousands of projected new coal cars and hundreds of new locomotives, assurances must be given that this investment will be fully utilized over its service life. This Commission cannot grant that assurance. However, the Federal Government in the form of low cost loans or by other means, including perhaps the purchase of cars by a semi-private government corporation, can assure railroad management and the general public of a truly national commitment which will make investment in coal cars attractive. In addition, the Commission must endeavor to make purchases of equipment by large shippers and receivers of coal attractive from a regulatory standpoint.

PART VI – OTHER MATTERS

As noted before, this proceeding is not an adversary proceeding. In adversary proceedings, it is frequently feasible, necessary, and desirable to dispose of issues in a short and concise manner. This report is comprehensive because it is designed to be educational in nature and investigative only for the purpose of informing the Commission of areas in which corrective actions appear necessary.

As previously noted, Part VI of the proceeding was designed to cover matters which did not fall within Parts I through V. The following are other matters pertinent to this investigation not directly related to those Parts.

32. *Return of the Carload Waybill Sample to the Commission*

The Coordinator recommends that the carload waybill sample currently prepared by the Department of Transportation (DOT) be returned for future preparation to the Commission.

The major objective and continuing value of the rail carload waybill sample is its use as a tool of research and analysis. It is a prime source from which reasonably reliable and comprehensive data can be obtained on railroad freight traffic movements and characteristics within the United States. Data derived from the waybill sample are used in the Commission for economic research, cost analysis, and proceedings support. For each of these purposes, it is essential that data gleaned from the waybills be current and accurate.

The Special Projects Counsel had hoped to develop independent rate and traffic analyses for presentation in this sub-proceeding. He stated in his opening statement, "We also expected to have the 1972 one-percent waybill file in our possession before seeking carrier data. Due to the lateness of its release by the Department of Transportation,. . .we did not receive the 1972 tapes until April 23, 1974." Not only was the Special Projects Counsel forced to rely on two year old data, but even that data was not received on schedule. With cost and rates changing with great rapidity, and with traffic patterns (particularly since the energy crisis) constantly shifting, a delay of this magnitude presents a serious deficiency.

Of equal import is the questionable accuracy of the DOT study. One of the Special Projects Counsel's witnesses stated as follows:

> In our opinion, however, it is not reasonable to believe that only 224 shipments of metallurgical coal [shown in the DOT waybill sample] were made during 1972, at the one-percent level, when compared to the 32,896 shipments of steam coal during the same period, also at the one-percent level.

Again, the same witness questioned the efficacy of the sampling procedures used at DOT:

> Specifically in the case of coal, the current widespread, perhaps dominant, practice of multiple car shipments is not reflected well in the waybill sample procedures. . . The procedure for the sample selection of 1 percent of all carloads is, in my judgment, cumbersome, complex, and therefore, relatively ineffective.

Deficiencies in the 1-percent waybill sample as it relates to coal were also brought out by an expert witness for the Southern District Railroads. We conclude that the waybill sample prepared by DOT has not been timely prepared on a current basis and has substantial inaccuracies. It is our view that the Commission is in a better position to process the carload waybill sample if adequate funds are made available for this purpose.

33. *Continuing Data Bank*

Modern techniques of data accumulation and analysis have reached the stage where it is feasible for the Commission to acquire a permanent data bank. Current information on traffic, costs, service, and equipment utilization would be constantly fed into a computer memory. The computer would be programmed to perform designated manipulations on this data depending upon the desired end use.

For example, the information currently available to the Commission concerning individual commodity competitive relationships is inadequate to allow meaningful selective rate increases as opposed to across-the-board percentage general rate increases. The computer data bank could be programmed to distinguish those commodities for which a percentage increase without a holddown would disorient competitive relationships, analyze patterns of traffic flow, and determine whether increased differentials have in fact upset competitive positions.

It is recommended that the program begin with those commodities already selected by the Coordinator for investigation under sub-numbered proceedings in Ex Parte No. 270. We recommend that in each commodity group a small number of typical rates each of which is known to move traffic be kept on a current basis. These selected rates would be currently compared with variable costs, their relationship to the Docket No. 28300 class rate scale, and other economic data.

For this purpose the Coordinator recommends that the Commission institute a perpetually-open sub-numbered proceeding in Ex Parte No. 270 under which relevant evidence and updates of the rate structures be required from each necessary party.

34. *Reconstruction of Commission Suspension Procedures*

It is to the Suspension and Fourth Section Board (Suspension Board) that the consumer watching service must submit its recommendations. The Suspension Board, located in the Bureau of Traffic, is charged by the Commission with the initial responsibility to determine whether to exercise the suspension and investigation authority conferred upon the Commission by statute. Appeals from the actions of the Suspension Board are normally disposed of by Division 2, the rate division composed of three Commissioners, and in rare instances, generally involving policy matters, the appeals are ruled upon by the entire Commission

The authority to suspend for a period of seven months rate proposals before they become effective enables the Commission to act before potential harm is inflicted upon the general public. This authority, little understood by the general public, distinguishes Commission economic regulation from post-injury protection generally accorded by anti-trust legislation. Accordingly, the operation and functional organization of the Suspension Board are matters that are of serious concern to the Commission.

Although the record in this proceeding does not disclose that any particular difficulties have been experienced by the Commission in the processing of changed coal rate proposals before the Suspension Board, the Coordinator is of the opinion that certain operational and staffing changes should be instituted by the Commission in order that the work of the board may be streamlined and the public better informed as to the reasons for its decisions. It should be understood that the changes hereinafter proposed do not reflect a dissatisfaction with the conduct of the board by the present incumbents. The board members have, in the Coordinator's judgment, performed their Commission delegated tasks with intelligence and dispatch. Rather, these recommendations to the Commission are made because of the necessity to redefine the mission of the Suspension Board in order to improve the Commission's ability to respond in a proper and expeditious manner to rapidly changing circumstances.

Suspension Board decisions, generally in order form, are presently rendered by 5 members. It is believed that a three member board, one or more of whom should be lawyers, can, if an appeal function is removed from its jurisdiction, function effectively. A reduction of from 5 to 3 in the board's composition, should enable the Commission to convince the Civil Service Commission that the position of board members must be upgraded.

The Suspension Board at present not only initially exercises the authority to suspend and/or investigate new rate proposals but it also prepares for submission to Division 2, or the entire Commission, its recommendations with respect to appeals from its decisions. Parties questioning a decision of the board are entitled to the assurance that their appeals will get the necessary and unbiased consideration they deserve. This can be accomplished by setting up a separate appeals unit headed by an attorney in the Bureau of Traffic. The function of this unit, if implemented by the Commission, will be to review appeals and submit recommendations after an independent analysis to Division 2 or if necessary to the entire Commission.

Similarly, in order to speed the decision of the Suspension Board and make certain that, after a formal record has been assembled, an independent cost analysis is prepared, it is recommended that a cost finding unit be established in the Bureau of Traffic. At present one section in the Bureau of Accounts not only assists the Suspension Board in evaluating cost considerations but also assists the decisional body by analyzing cost evidence of record in a formal proceeding instituted as a result of action taken by the Suspension Board.

The public is entitled to know, in greater detail than is given at present, the reasons for suspending a rate proposal. Presently, many of the orders of the Suspension Board merely state the reasons for its action in terms of statutory phrases, i.e., appears unjust and unreasonable or it appears that undue preference or prejudice will result if the proposal becomes effective. A reconstituted board, along the lines suggested, can and should in its orders give those concerned a clearer indication of the considerations that resulted in a determination to suspend and/or investigate.

35. *Environmental Assessment*

The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321 et seq., requires Federal agencies to consider environmental amenities in their decision-making process and directs that detailed environmental impact statements be issued in conjunction with major Federal actions significantly affecting the quality of our human environment.

Timing is crucial to a proper determination of when, if at all, an impact statement should be drafted. As stated in *Scientists Institute for Public Information, Inc.* v. *Atomic Energy Commission,* No. 72-1331, United States District Court of Appeals for the District of Columbia Circuit, environmental statements must be written late enough to contain meaningful information but early enough so that information can serve as an input into the decision-making process.

In our order instituting this sub-numbered proceeding we concluded that a detailed environmental impact statement was not required *at this time* by the National Environmental Policy Act of 1969. We stated that the environmental issues in this proceeding would be constantly evaluated with the view to determining whether an impact statement should be issued and if so, at what point it would be the most meaningful.

The principal purpose of the sub-numbered investigation is educational in nature; i.e., to describe in detail the nature of the freight rate structures on coal which are both complex and baffling; and to pinpoint those areas in the coal freight rate structures which may require corrective action, after according all parties their statutory rights and according them due process of law. An environmental impact statement drafted *before* the details of the freight structure were known, as we recognized in our order, would have been premature and meaningless.

Each of the actions which the Coordinator has suggested that the Commission take will be now discussed for the purpose of stating at which stage, if at all, an environmental impact statement should be issued.

The first recommendation of the Coordinator is that the Commission institute a rulemaking proceeding for the purpose of defining certain terms in the Commission's tariff circular rules governing the publication and filing of rail tariffs. Should the Commission follow the Coordinator's recommendation, it appears that the appropriate time to issue an environmental impact statement pertaining thereto, assuming one is necessary, would be simultaneous with the Commission's notice of *proposed* rulemaking. We are of the opinion, however, that a proposed rule change of the type recommended by the Coordinator would not constitute a major Federal action significantly affecting the quality of the human environment, and accordingly no useful purpose would be served by commencing such a rulemaking proceeding with the issuance of a draft environmental impact statement.

A second recommendation of the Coordinator is that certain bureaus and offices of the Commission be restructured in order to fulfill the Commission's duties and responsibilities in connection with the freight rate structures, including the return from the Department of Transportation of the processing of the 1-percent waybill sample. It is our view that internal alignments of work within an agency are not matters coming within the purview of the National Environmental Policy Act of 1969.

A third recommendation of the Coordinator is that the Commission institute a perpetually-open proceeding for the purpose of accumulating a data bank available to shippers, carriers, and the Commission for use in general revenue proceedings. It is our view that the opening of a proceeding solely for the purpose of collecting data does not constitute a major Federal action significantly affecting the quality of the human environment.

The Coordinator has also recommended that the Commission institute a proceeding separate and apart from Ex Parte No. 270 into the justness and reasonableness of rates on coal, including lignite, from Bituminous Coal Producing District Nos. 16 through 22, to points east of the Rocky Mountains; that zones of reasonableness be established or prescribed; that regional oral hearings be held in connection therewith; and that a draft environmental impact statement be issued. Should the Commission follow this recommendation it would appear that the appropriate time for service of the required draft environmental impact statement would be immediately prior to, or simultaneously with, the order instituting the investigation. We note that a 5-volume draft environmental impact statement relating to the development of coal resources in the Eastern Powder River Coal Basin of Wyoming (a part of Bituminous Coal Producing District No. 19), prepared jointly by the Bureau of Land Management, United States Forest Service, United States Geological Survey, and the Interstate Commerce Commission, was released in June 1974.

PART VII – ULTIMATE FINDINGS

The Coordinator finds:

1. That the overall freight rate structure on coal is compensatory and not unreasonably high, but some individual rates fall below the zone of reasonableness;

2. That a need exists for a revised uniform terminology in tariff schedules on bituminous coal in order to improve their understandability, feasibility of application, freedom from controversy, and facilitation of the regulatory process;

3. That the impact of general freight rate increases applied to the transportation of coal has not been self-defeating but has been necessary in generating additional revenue to pay for increased labor costs and higher prices of materials and supplies;

4. That the application of general increases authorized by the Commission has not caused any substantial distortions in the freight rate structure, but that some distortions in the freight rate structure exist which have evolved apart from general freight increases and which have been amplified by such general increases;

5. That the impact of general freight increases on coal has had an uneven effect in meeting the revenue requirements of individual railroads;

6. That the general freight increases sought by the railroads and authorized by the Commission have for the most part been for the purpose of offsetting higher prices of materials and supplies and increased wage costs; that under present conditions increased rates on coal, standing alone will not furnish sufficient inducement for carriers to purchase all of the coal cars and locomotive units to meet reasonable demands for the next 5 years;

7. That a need exists for the determination of maximum or minimum, or maximum and minimum, reasonable rates for movements of bituminous coal and lignite from Bituminous Coal Producing District Nos. 16 through 22, except from points in the State of California, to all points in the United States east of the Rocky Mountains; that a formal investigation separate and apart from Ex Parte No. 270 be entered into by the Commission for the purpose of determining maximum and/or minimum scales of rates, including the setting of oral hearings in the Rocky Mountain-Upper Missouri River Region; that an appropriate environmental impact statement be timely issued in connection therewith;

8. That a need exists for realignment of duties and responsibilities of certain bureaus and offices of the Commission in order to fulfill the Commission's duties in relation to the freight rate structure on coal, including a need for the return from the Department of Transportation of the processing of the 1-percent waybill simple;

9. That a need exists for a perpetually-open proceeding for the accumulation of a bank of data available to shippers, carriers, and the Commission, particularly for use in general revenue proceedings;

10. That this report does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969.

It is ordered, That this sub-numbered proceeding be, and it is hereby, closed.

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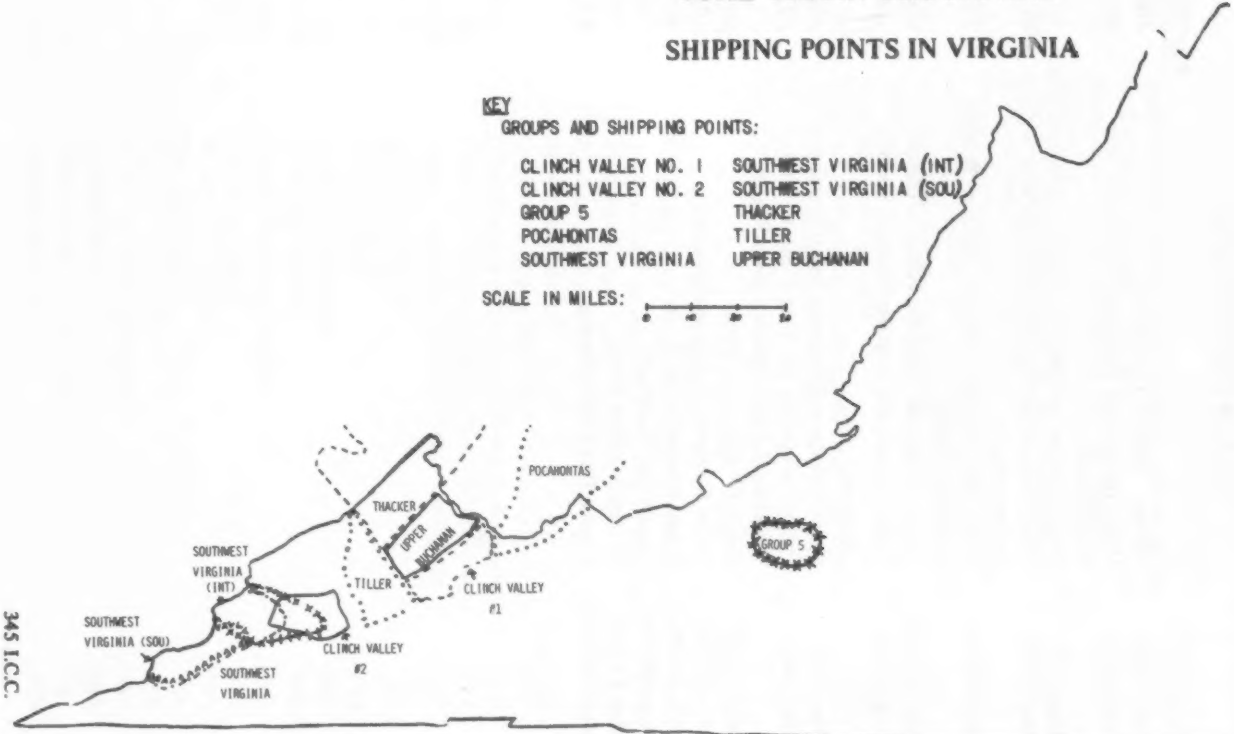
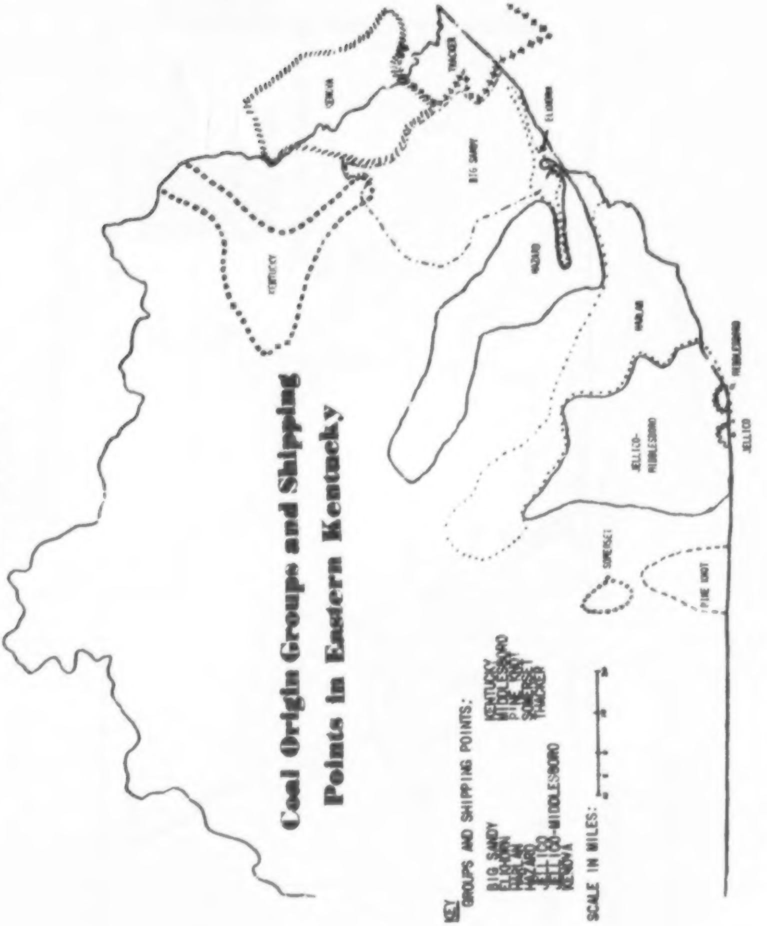
MAP NUMBER V

COAL ORIGIN GROUPS AND SHIPPING POINTS IN VIRGINIA


KEY
GROUPS AND SHIPPING POINTS:
CLINCH VALLEY NO. 1
CLINCH VALLEY NO. 2
GROUP 5
POCAHONTAS
SOUTHWEST VIRGINIA
SOUTHWEST VIRGINIA (INT)
SOUTHWEST VIRGINIA (SOU)
THACKER
TILLER
UPPER BUCHANAN
SCALE IN MILES:
0
10
20
30
POCAHONTAS
THACKER
UPPER BUCHANAN
GROUP 5
SOUTHWEST VIRGINIA (INT)
TILLER
CLINCH VALLEY #1
SOUTHWEST VIRGINIA (SOU)
CLINCH VALLEY #2
SOUTHWEST VIRGINIA

MAP NUMBER VI

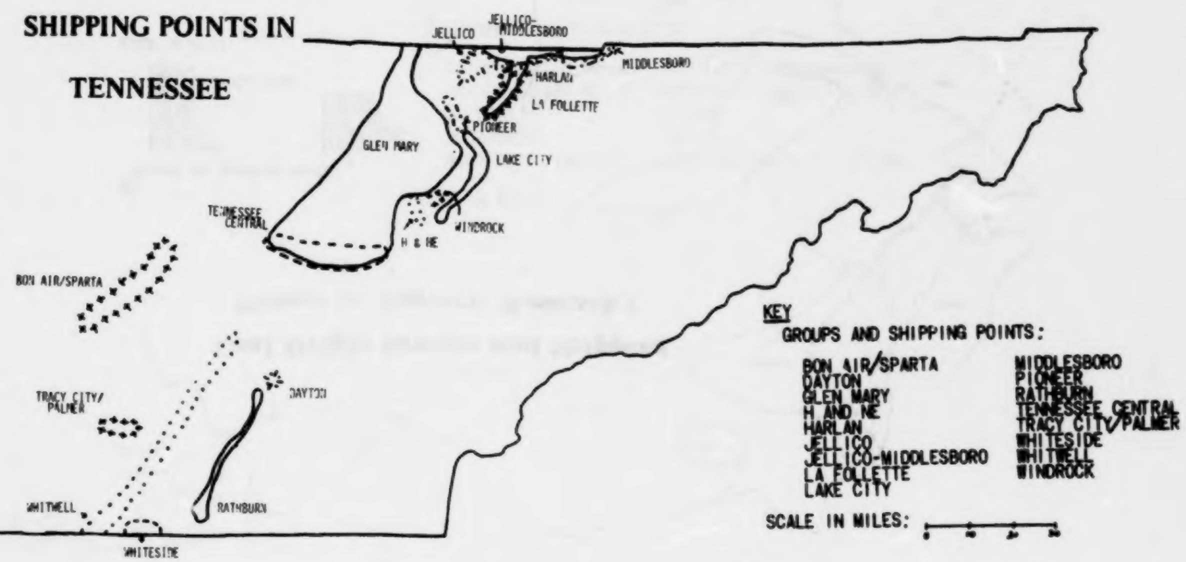
Coal Origin Groups and Shipping Points in Eastern Kentucky


KENOVA
THACKER
ELKHORN
BIG SANDY
KENTUCKY
HAZARD
HARLAN
MIDDLESBORO
JELLICO
JELLICO-MIDDLESBORO
SOMERSET
PINE KNOT
KEY
GROUPS AND SHIPPING POINTS:
BIG SANDY
ELKHORN
HARLAN
HAZARD
JELLICO
JELLICO-MIDDLESBORO
KENOVA
KENTUCKY
MIDDLESBORO
PINE KNOT
SOMERSET
THACKER
SCALE IN MILES:

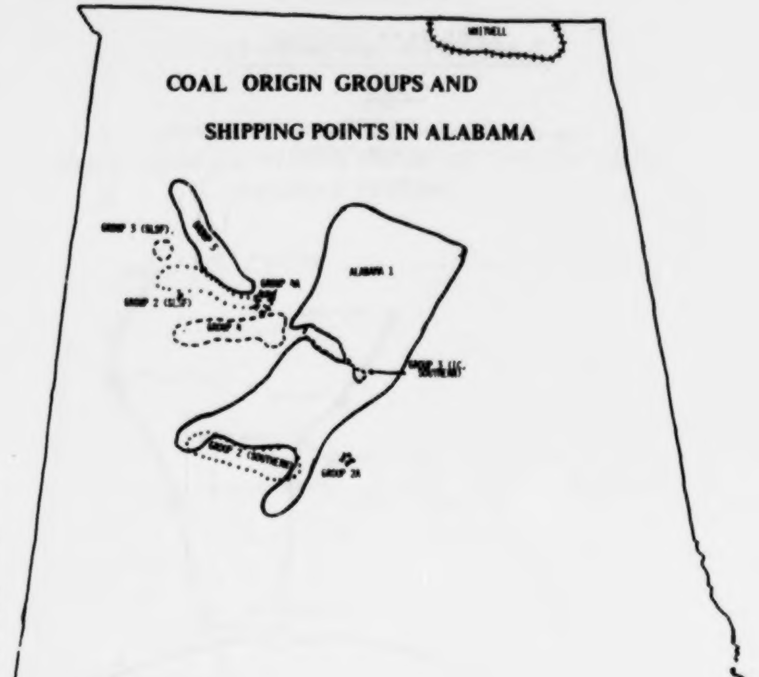
best copy available

MAP NUMBER VII

COAL ORIGIN GROUPS AND SHIPPING POINTS IN TENNESSEE


JELLICO
JELLICO-MIDDLESBORO
HARLAN
MIDDLESBORO
LA FOLLETTE
PIONEER
GLEN MARY
LAKE CITY
TENNESSEE CENTRAL
WINDROCK
H & NE
BON AIR/SPARTA
TRACY CITY/PALMER
DAYTON
RATHBURN
WHITWELL
WHITESIDE
KEY
GROUPS AND SHIPPING POINTS:
BON AIR/SPARTA
DAYTON
GLEN MARY
H AND NE
HARLAN
JELLICO
JELLICO-MIDDLESBORO
LA FOLLETTE
LAKE CITY
MIDDLESBORO
PIONEER
RATHBURN
TENNESSEE CENTRAL
TRACY CITY/PALMER
WHITESIDE
WHITWELL
WINDROCK
SCALE IN MILES:
0

MAP NUMBER VIII



COAL ORIGIN GROUPS AND

SHIPPING POINTS IN ALABAMA

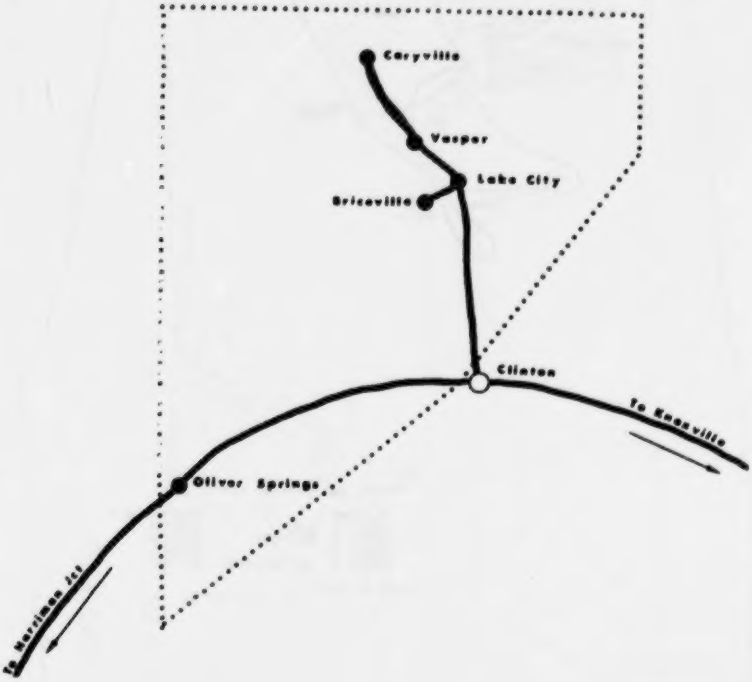
WHITWELL
GROUP 3 (SLSF)
GROUP 5
ALABAMA 1
GROUP 4A
GROUP 2 (SLSF)
GROUP 4
GROUP 3 (IC-SOUTHERN)
GROUP 2 (SOUTHERN)
GROUP 2A
KEY
GROUPS AND SHIPPING POINTS:
ALABAMA I
GROUP 2 SLSF
GROUP 2 SOUTHERN
GROUP 2A
GROUP 3 IC, SOUTHERN
GROUP 3 SLSF
GROUP 4
GROUP 4A
GROUP 5
WHITWELL
SCALE IN MILES:

MAP NUMBER IX

LAKE CITY DISTRICT

27

(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)

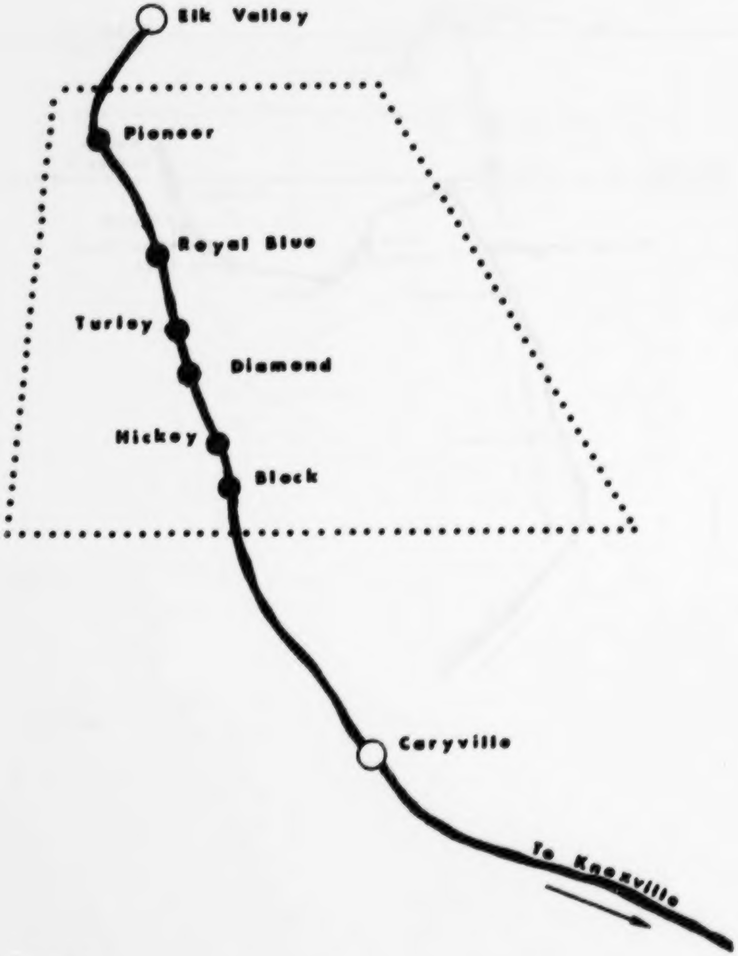

Caryville
Vasper
Lake City
Briceville
Clinton
To Knoxville
Oliver Springs
To Harriman Jct

MAP NUMBER X

PIONEER DISTRICT

28

(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN
RAILWAY SYSTEM)

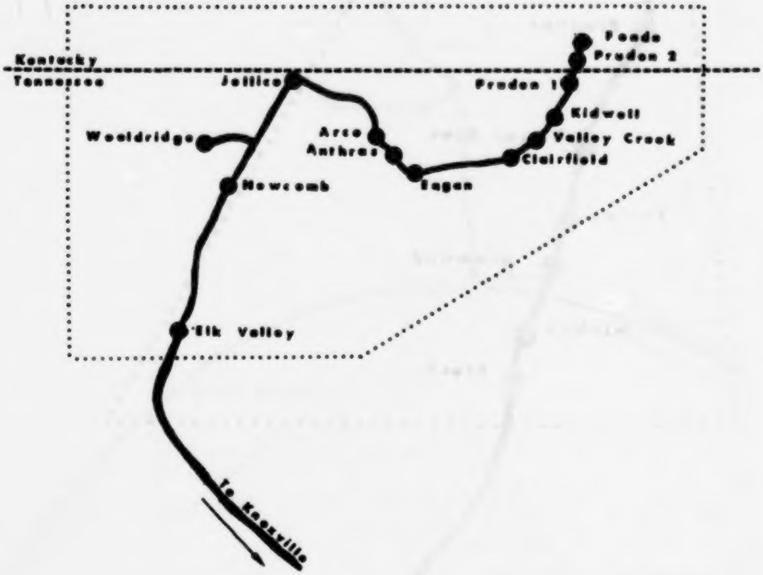

Elk Valley
Pioneer
Royal Blue
Turley
Diamond
Hickey
Block
Caryville
To Knoxville

MAP NUMBER XI

JELLICO DISTRICT

29

(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)

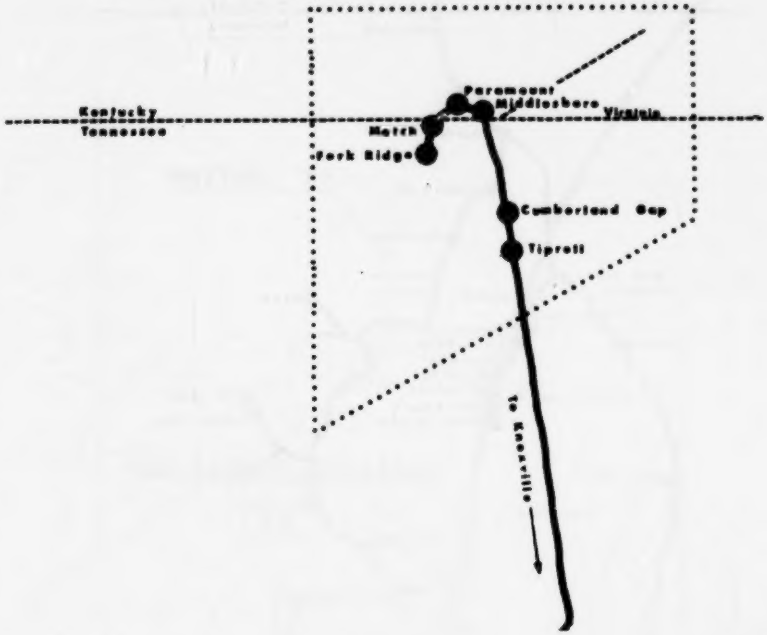

Kentucky
Tennessee
Jellico
Wooldridge
Newcomb
Elk Valley
To Knoxville
Arco
Anthras
Eagan
Clairfield
Valley Creek
Kidwell
Pruden 1
Pruden 2
Fonde

MAP NUMBER XII

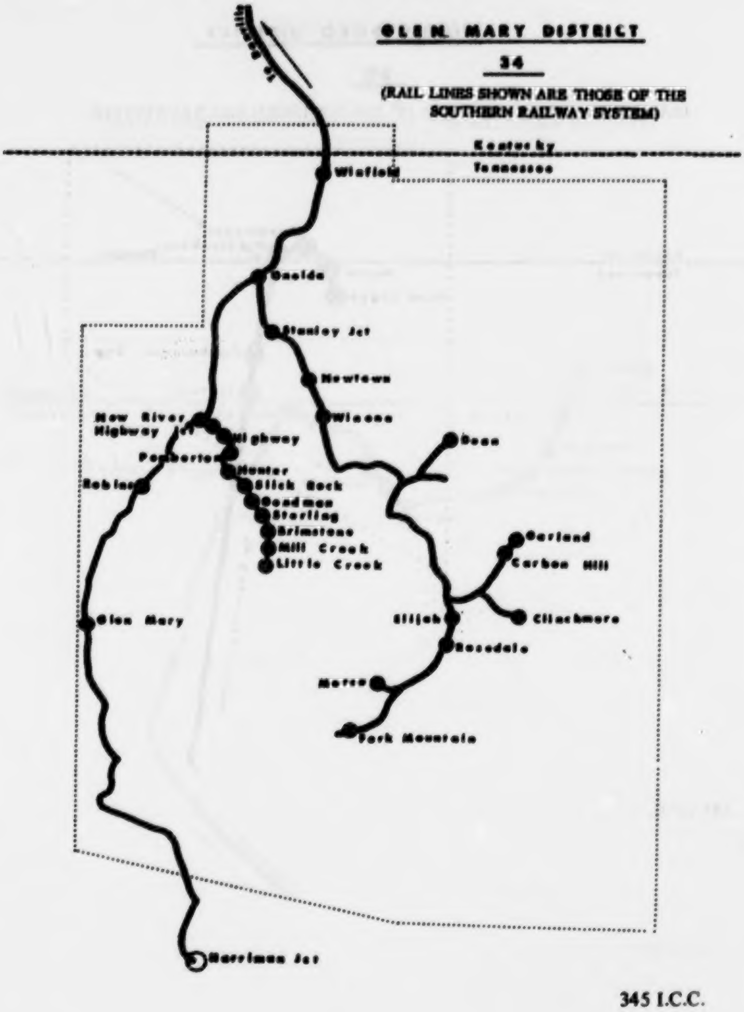
MIDDLESBORO DISTRICT

30

(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)


Kentucky
Tennessee
Paramount
Middlesboro
Virginia
Hatch
Fork Ridge
Cumberland Gap
Tiprell
To Knoxville

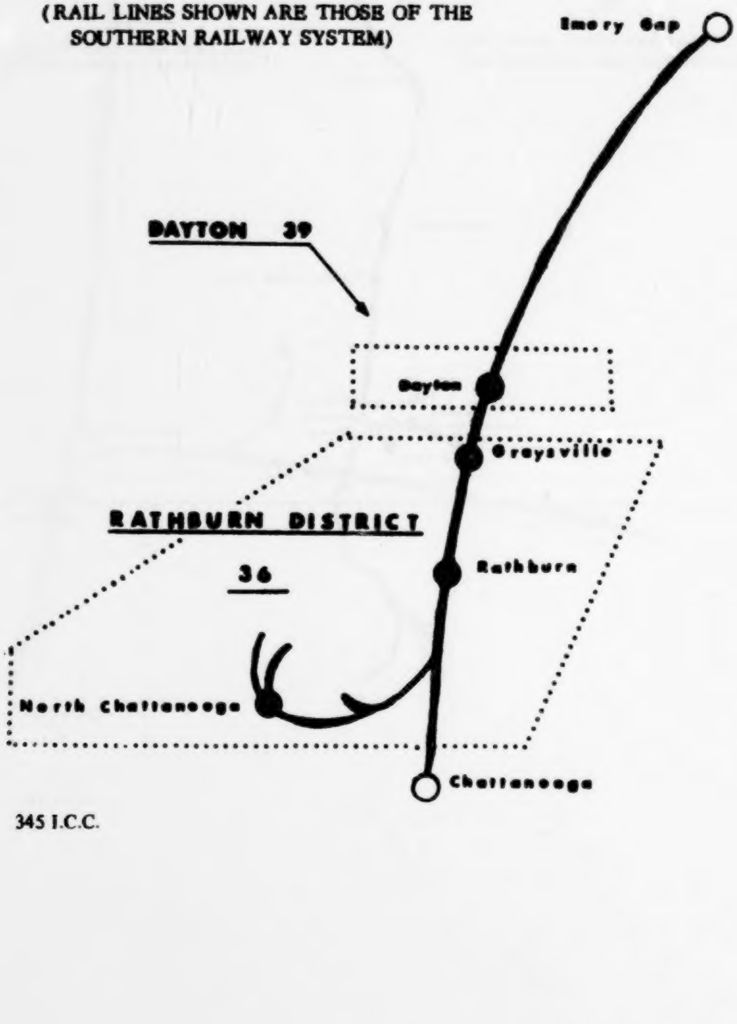
MAP NUMBER XIII


GLEN MARY DISTRICT
34
(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)
To Danville
Kentucky
Tennessee
Winfield
Oneida
Stanley Jct
Newtown
Winona
New River
Highway Jct
Highway
Pemberton
Robbins
Hunter
Slick Rock
Deadman
Sterling
Brimstone
Mill Creek
Little Creek
Dean
Garland
Carbon Hill
Clinchmore
Elijah
Rosedale
Morco
Fork Mountain
Glen Mary
Harriman Jct

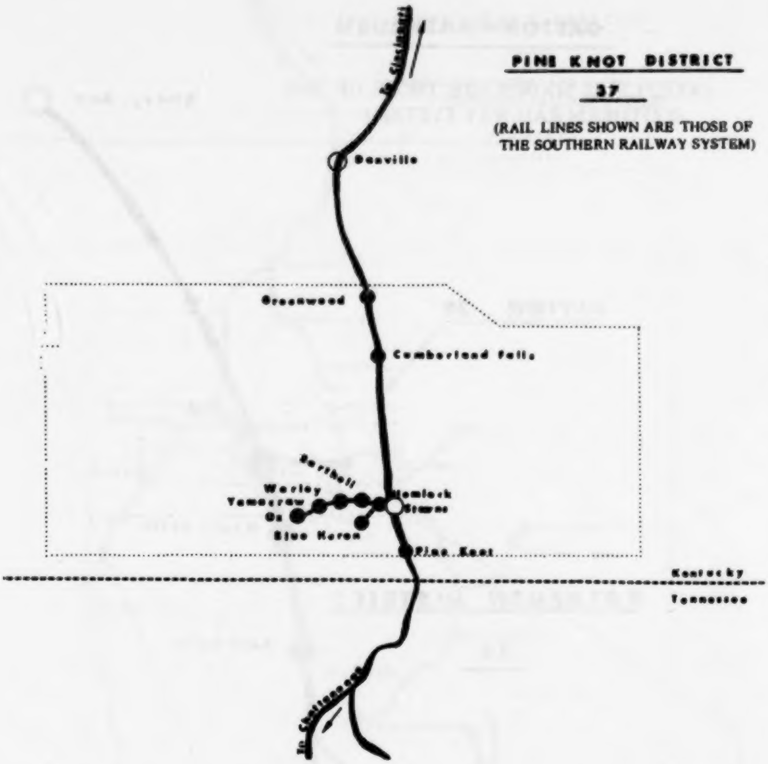
MAP NUMBER XIV

DAYTON—RATHBURN

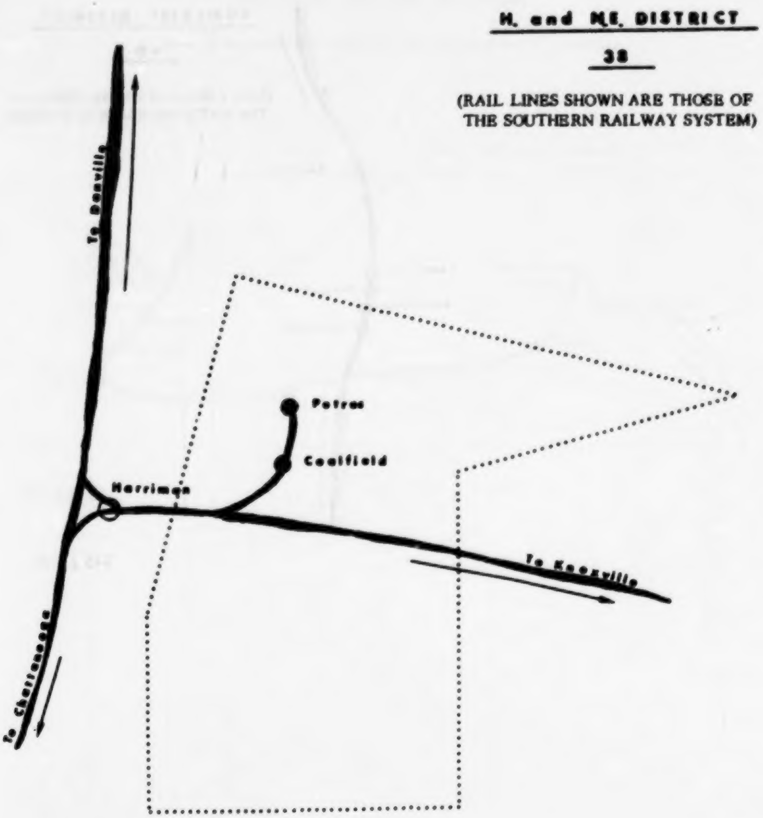
(RAIL LINES SHOWN ARE THOSE OF THE
SOUTHERN RAILWAY SYSTEM)


Emory Gap
DAYTON 39
Dayton
Graysville
RATHBURN DISTRICT
36
Rathburn
North Chattanooga
Chattanooga

MAP NUMBER XV

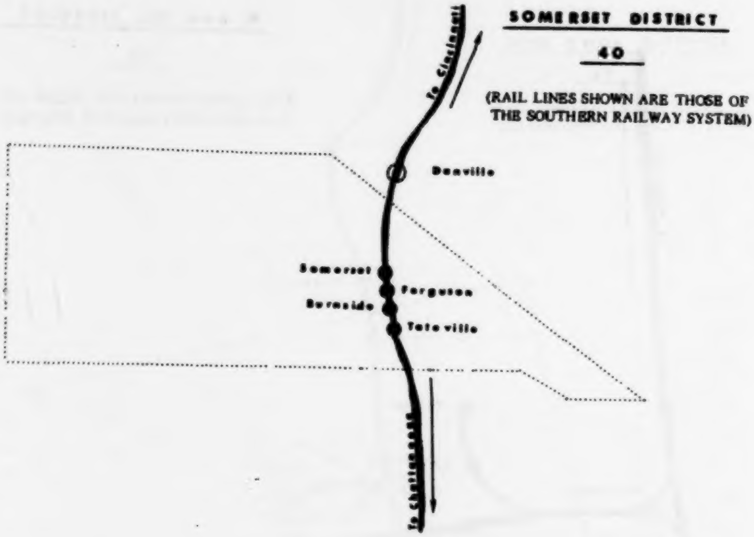

PINE KNOT DISTRICT
37
(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)
To Cincinnati
Danville
Greenwood
Cumberland Falls
Barthell
Worley
Yamacraw
Oz
Blue Heron
Hemlock
Stearns
Pine Knot
Kentucky
Tennessee
To Chattanooga

MAP NUMBER XVI


H. and N.E. DISTRICT
38
(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)
To Danville
Petros
Coalfield
Harriman
To Knoxville
To Chattanooga

345 I.C.C.

MAP NUMBER XVII

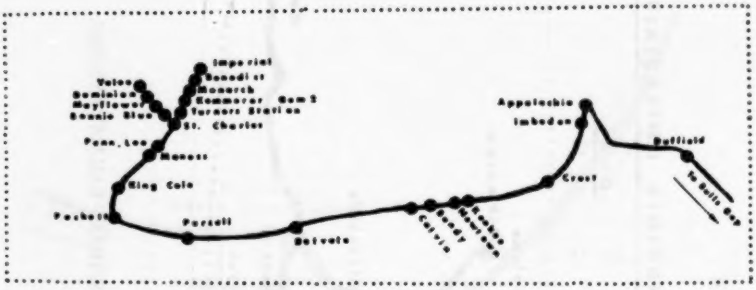

SOMERSET DISTRICT
40
(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)
To Cincinnati
Danville
Somerset
Ferguson
Burnside
Tateville
To Chattanooga

MAP NUMBER XVIII

SOUTHWEST VIRGINIA (SOUTHERN)

6

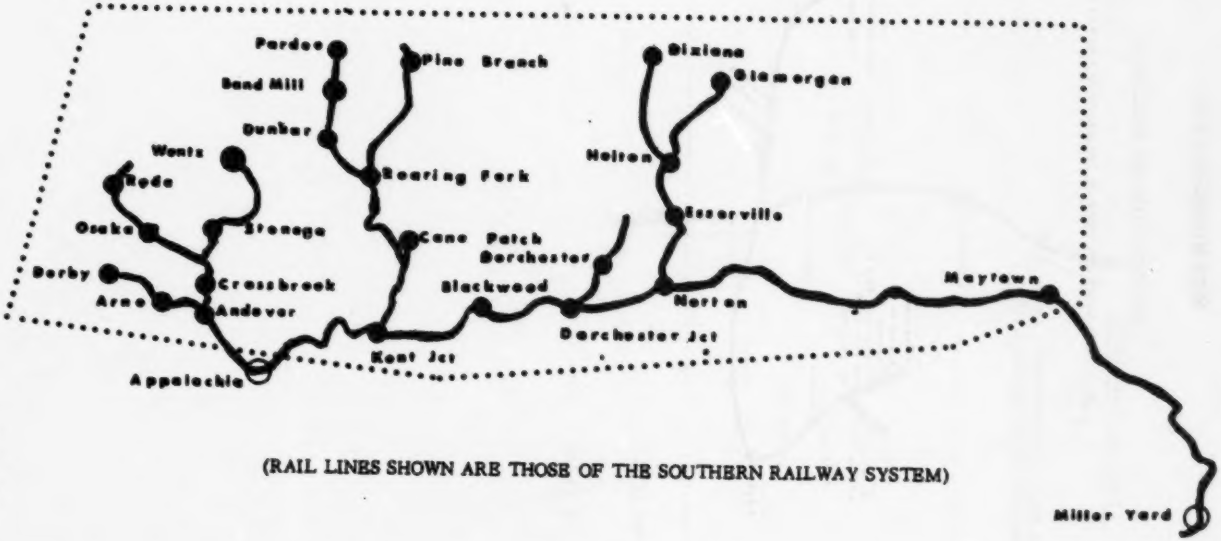
(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)


Imperial
Benedict
Valco
Monarch
Dominion
Kemmerer Gem 2
Mayflower
Turners Station
Bonnie Blue
St. Charles
Penn. Lee
Maness
King Cole
Pocket
Purcell
Delvale
Calvin
Bondy
Newtown
Kenbee
Crest
Appalachia
Imboden
Duffield
To Bulls Gap

MAP NUMBER XIX

SOUTHWEST VIRGINIA (INTERSTATE) DISTRICT

6-A


Pardee
Band Mill
Dunbar
Wentz
Roda
Osaka
Stonega
Derby
Arno
Crossbrook
Andover
Appalachia
Pine Branch
Roaring Fork
Cane Patch
Kent Jct
Blackwood
Dorchester
Dorchester Jct
Dixiana
Glamorgan
Holton
Esserville
Norton
Maytown
Miller Yard

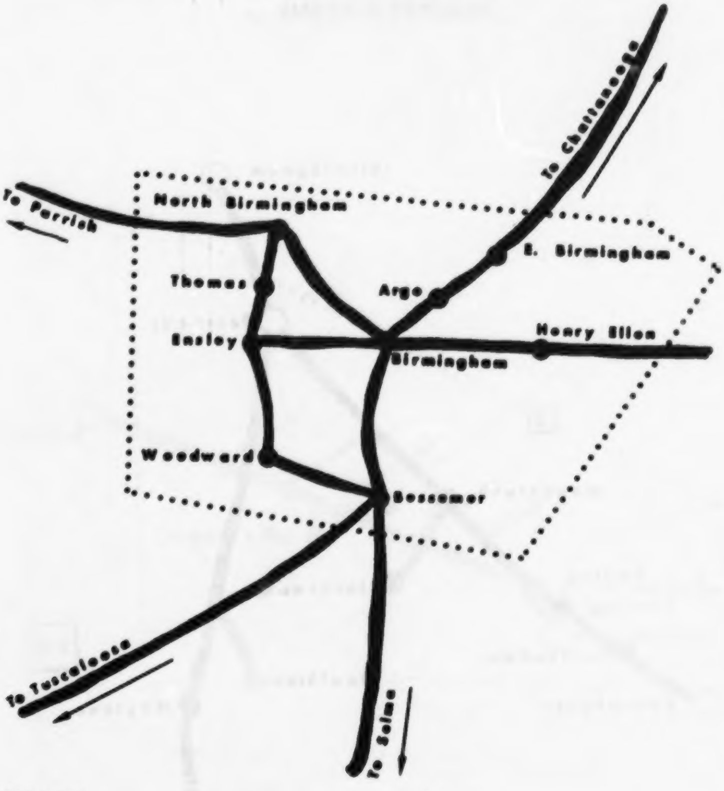
(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)

MAP NUMBER XX

ALABAMA DISTRICT

1

(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)

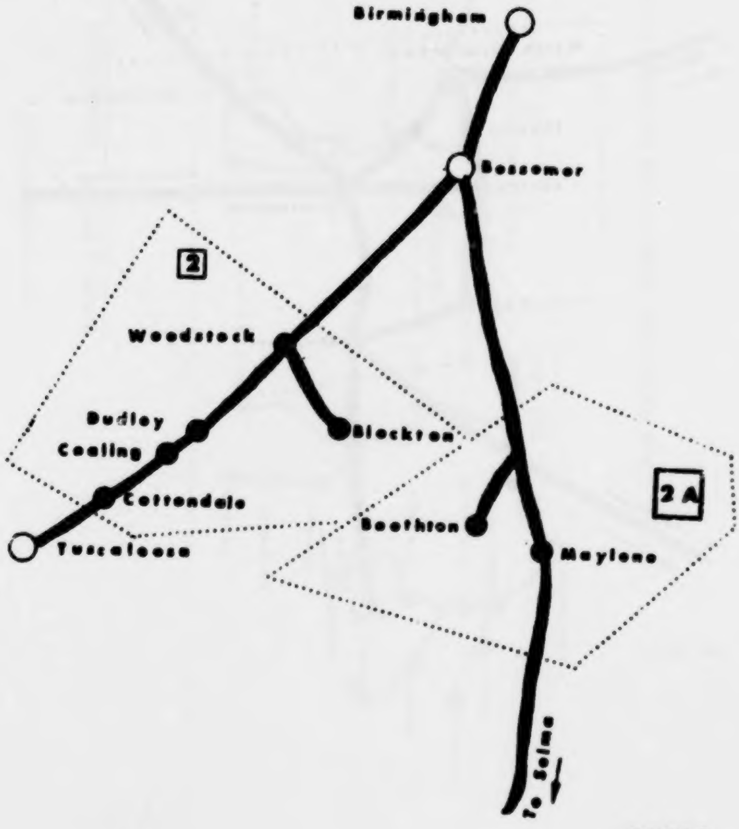

To Chattanooga
To Parrish
North Birmingham
E. Birmingham
Thomas
Argo
Ensley
Henry Ellen
Birmingham
Woodward
Bessemer
To Tuscaloosa
To Selma

MAP NUMBER XXI

ALABAMA DISTRICT

2 and 2A

(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)

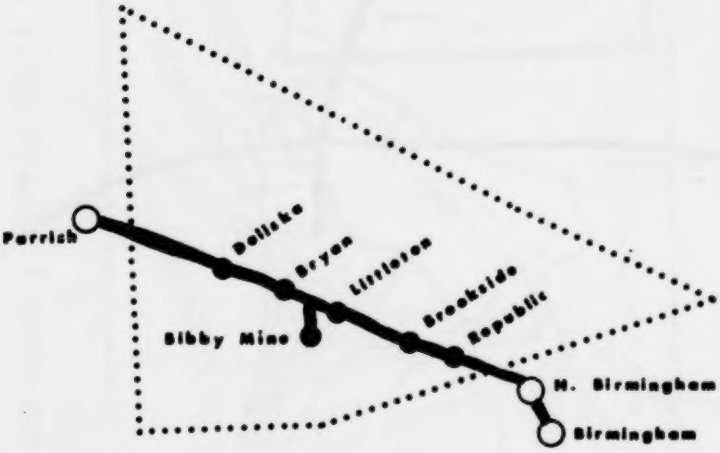

Birmingham
Bessemer
2
Woodstock
Dudley
Coaling
Blockton
Cottondale
Tuscaloosa
Boothton
2 A
Maylene
To Selma

MAP NUMBER XXII

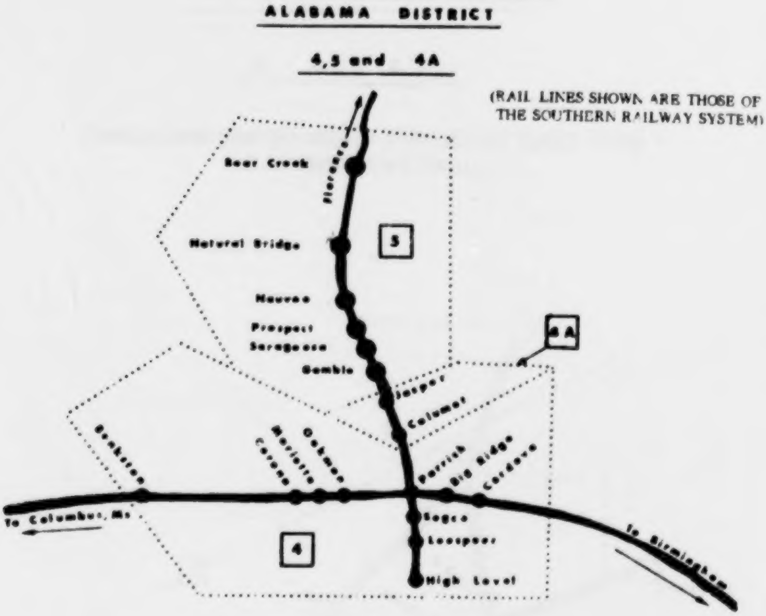
ALABAMA DISTRICT

3

(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)

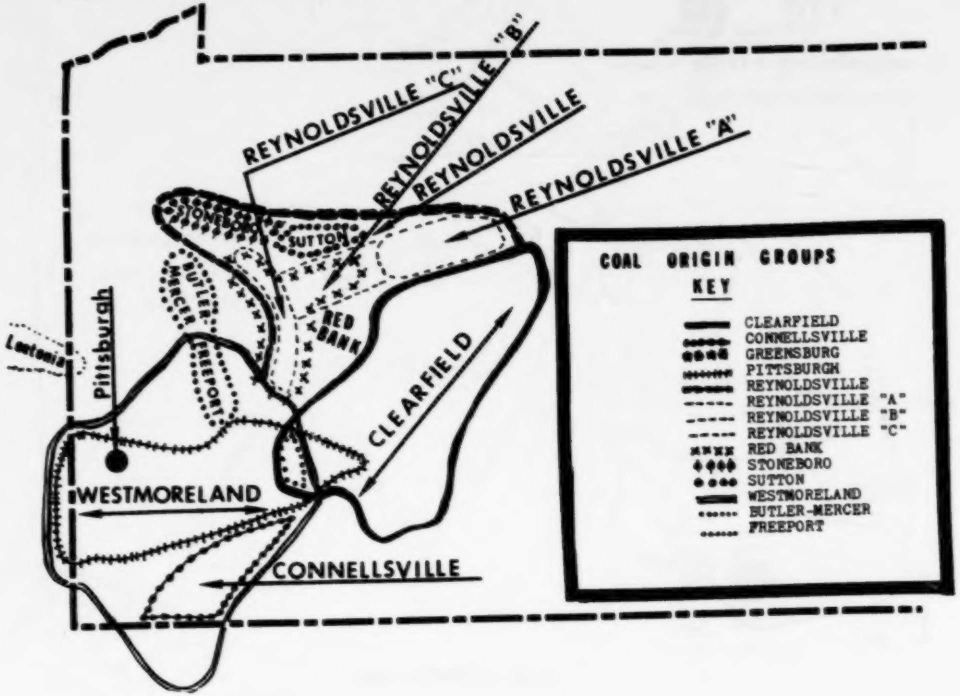

Parrish
Dollska
Bryan
Littleton
Brookside
Republic
Bibby Mine
N. Birmingham
Birmingham

MAP NUMBER XXIII

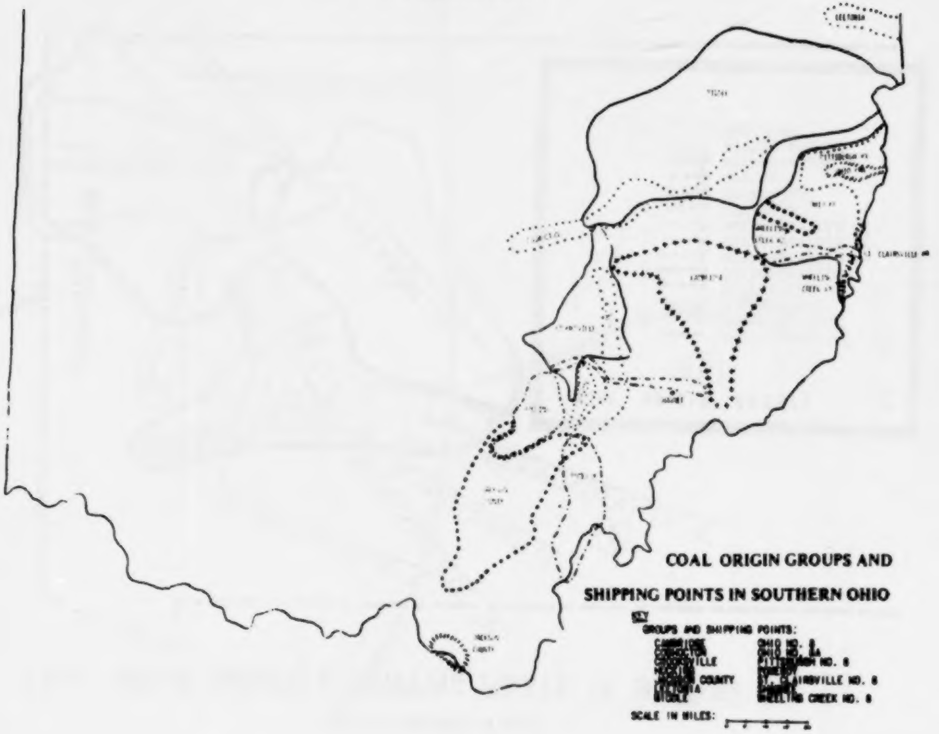

ALABAMA DISTRICT
4,5 and 4A
(RAIL LINES SHOWN ARE THOSE OF THE SOUTHERN RAILWAY SYSTEM)
Florence
Bear Creek
Natural Bridge
5
Nauvoo
Prospect
Saragossa
Gamble
4A
Jasper
Calumet
Bankston
Corona
Marietta
Oakman
Parrish
Big Ridge
Cordova
To Columbus, Ms
Sagco
Loospeer
4
High Level
To Birmingham

MAP NUMBER XXIV

COAL ORIGIN GROUPS & SHIPPING POINTS IN WESTERN PA.

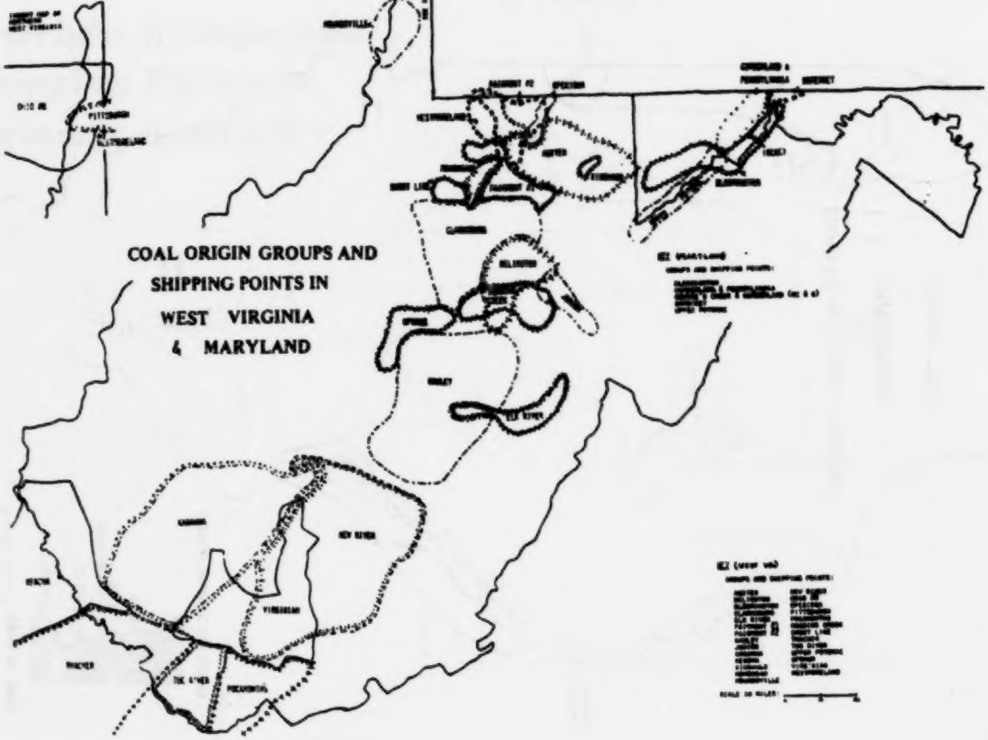

REYNOLDSVILLE "C"
REYNOLDSVILLE "B"
REYNOLDSVILLE
REYNOLDSVILLE "A"
STONEBORO
SUTTON
BUTLER MERCER
RED BANK
FREEPORT
CLEARFIELD
Laetonia
Pittsburgh
WESTMORELAND
CONNELLSVILLE
COAL ORIGIN GROUPS
KEY
CLEARFIELD
CONNELLSVILLE
GREENSBURG
PITTSBURGH
REYNOLDSVILLE
REYNOLDSVILLE "A"
REYNOLDSVILLE "B"
REYNOLDSVILLE "C"
RED BANK
STONEBORO
SUTTON
WESTMORELAND
BUTLER-MERCER
FREEPORT

MAP NUMBER XXV


KEY
GROUPS AND SHIPPING POINTS:
JACKSON COUNTY
PITTSBURGH NO. 8
ST. CLAIRSVILLE NO. 8
WHEELING CREEK NO. 8
SCALE IN MILES:

COAL ORIGIN GROUPS AND SHIPPING POINTS IN SOUTHERN OHIO

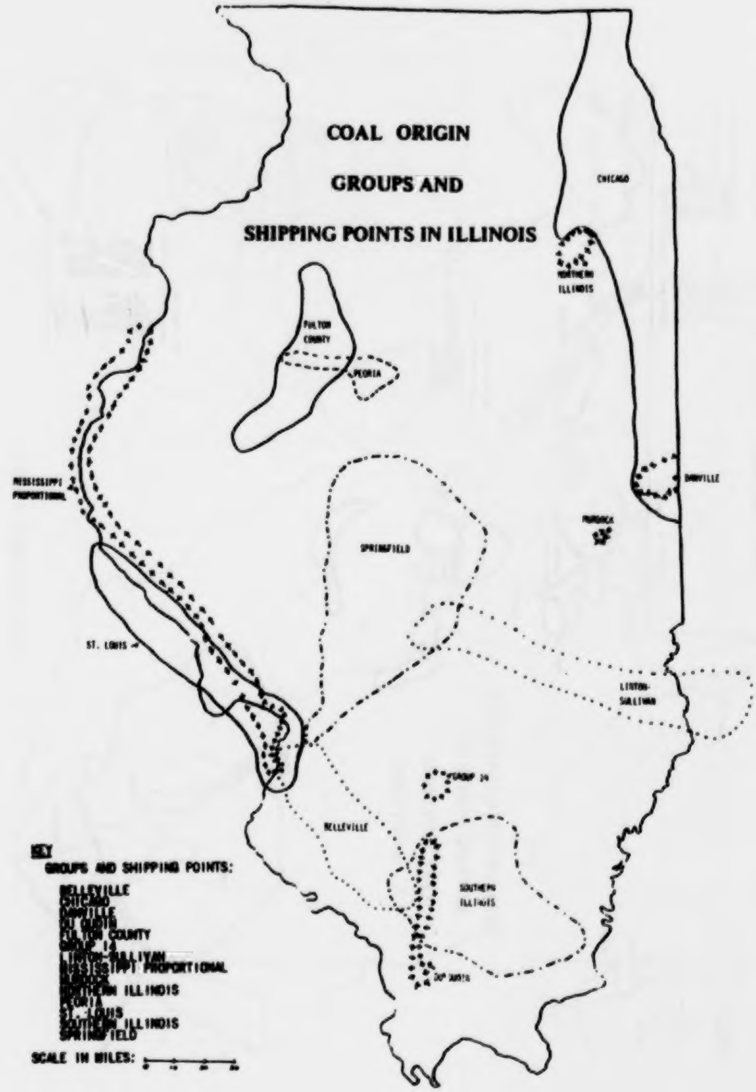
MAP NUMBER XXVI



COAL ORIGIN GROUPS AND
SHIPPING POINTS IN
WEST VIRGINIA
& MARYLAND

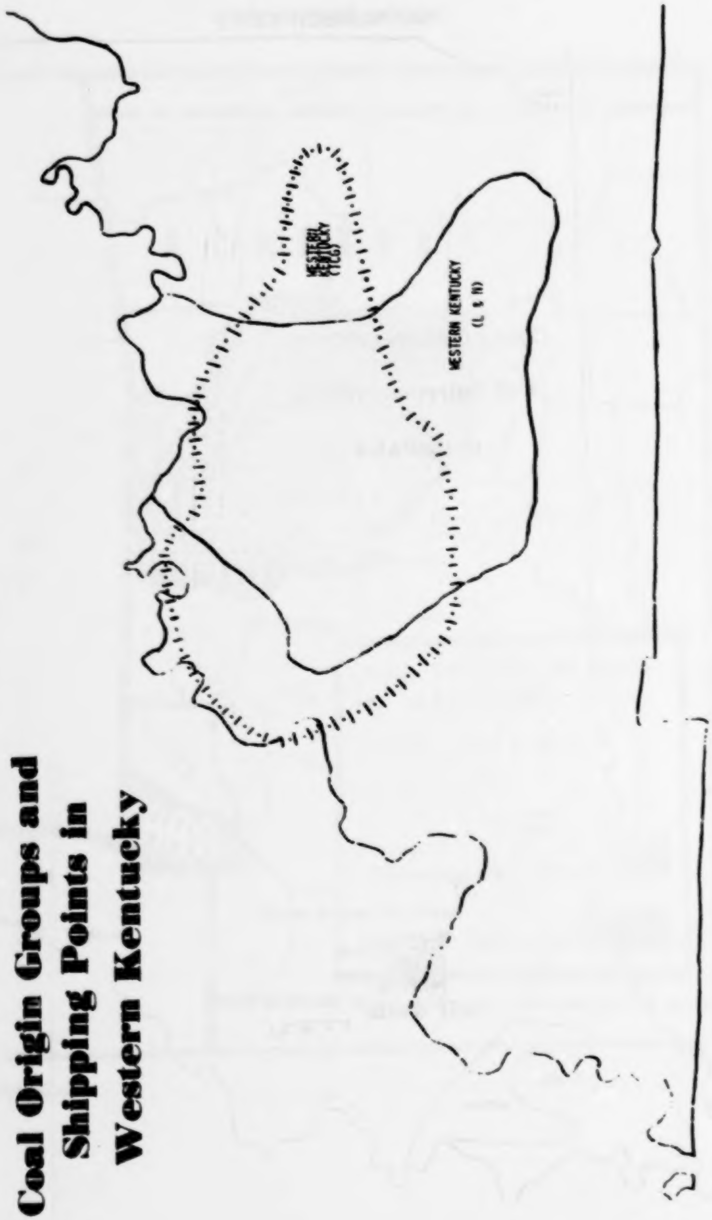
NEW RIVER
TUG RIVER

MAP XXVIII

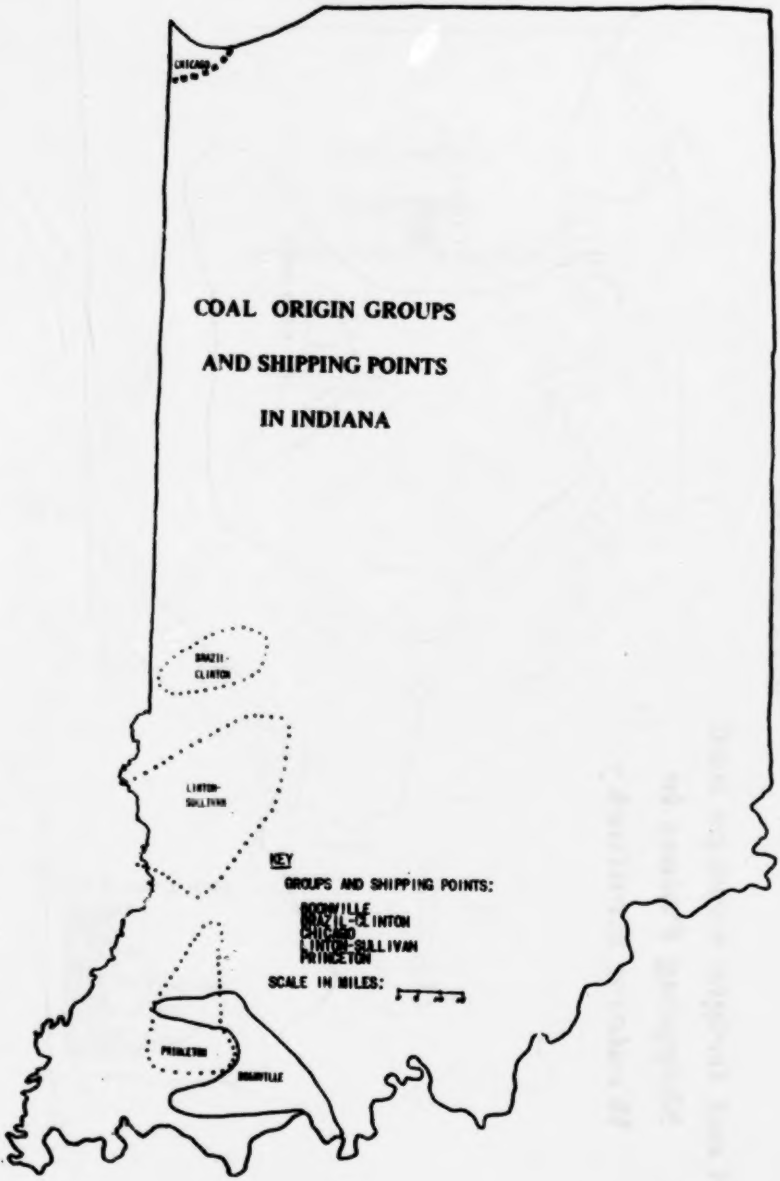

COAL ORIGIN
GROUPS AND
SHIPPING POINTS IN ILLINOIS
CHICAGO
NORTHERN ILLINOIS
FULTON COUNTY
PEORIA
MISSISSIPPI PROPORTIONAL
DANVILLE
MURDOCK
SPRINGFIELD
ST. LOUIS
LINTON-SULLIVAN
GROUP 14
BELLEVILLE
SOUTHERN ILLINOIS
DU QUOIN
KEY
GROUPS AND SHIPPING POINTS:
BELLEVILLE
CHICAGO
DANVILLE
DU QUOIN
FULTON COUNTY
GROUP 14
LINTON-SULLIVAN
MISSISSIPPI PROPORTIONAL
MURDOCK
NORTHERN ILLINOIS
PEORIA
ST. LOUIS
SOUTHERN ILLINOIS
SPRINGFIELD
SCALE IN MILES:

MAP NUMBER XXIX

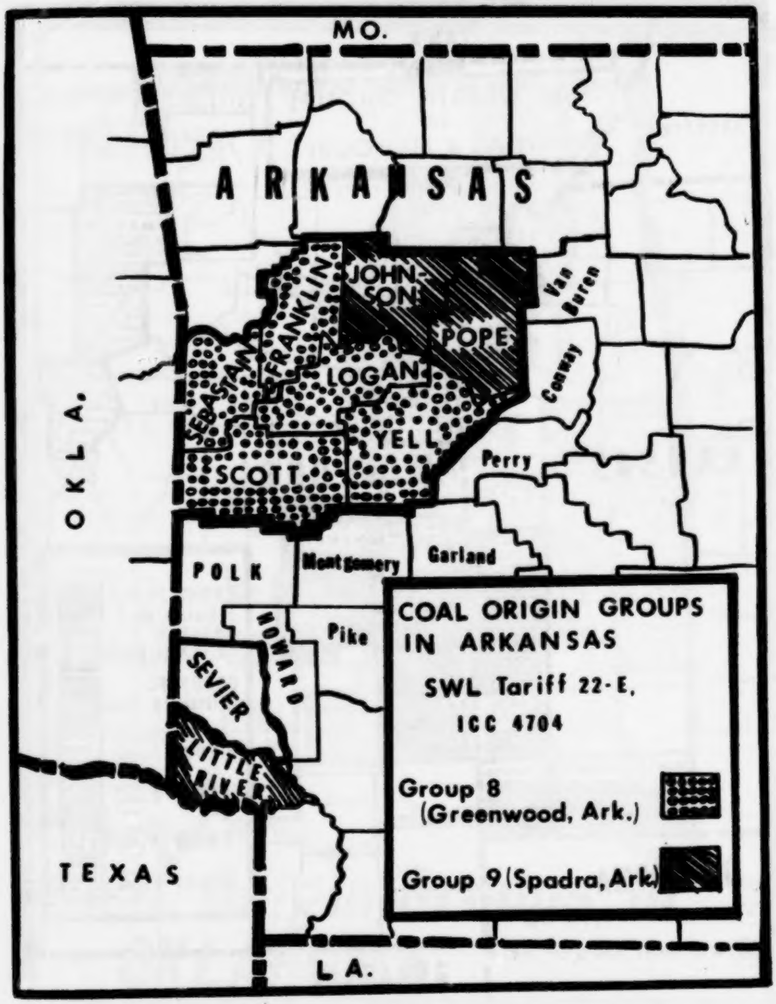
Coal Origin Groups and Shipping Points in Western Kentucky


WESTERN KENTUCKY (I.C.G.)
WESTERN KENTUCKY (L & N)

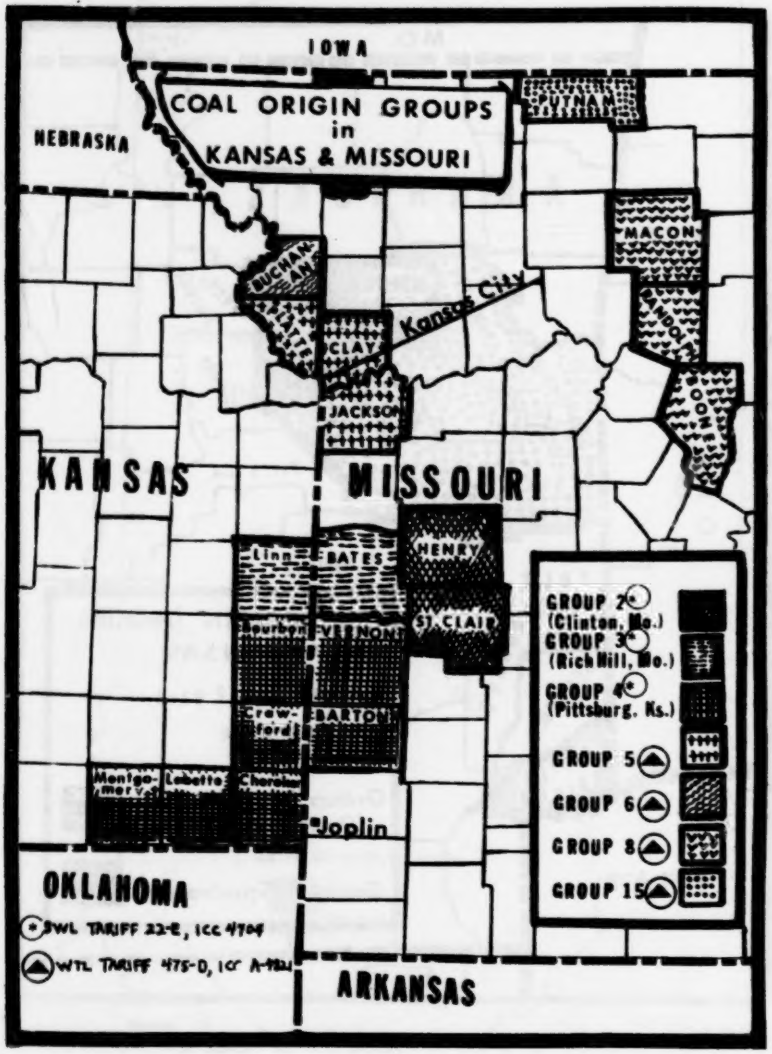
MAP NUMBER XXX


CHICAGO
COAL ORIGIN GROUPS
AND SHIPPING POINTS
IN INDIANA
BRAZIL-CLINTON
LINTON-SULLIVAN
KEY
GROUPS AND SHIPPING POINTS:
BOONVILLE
BRAZIL-CLINTON
CHICAGO
LINTON-SULLIVAN
PRINCETON
SCALE IN MILES:
PRINCETON
BOONVILLE

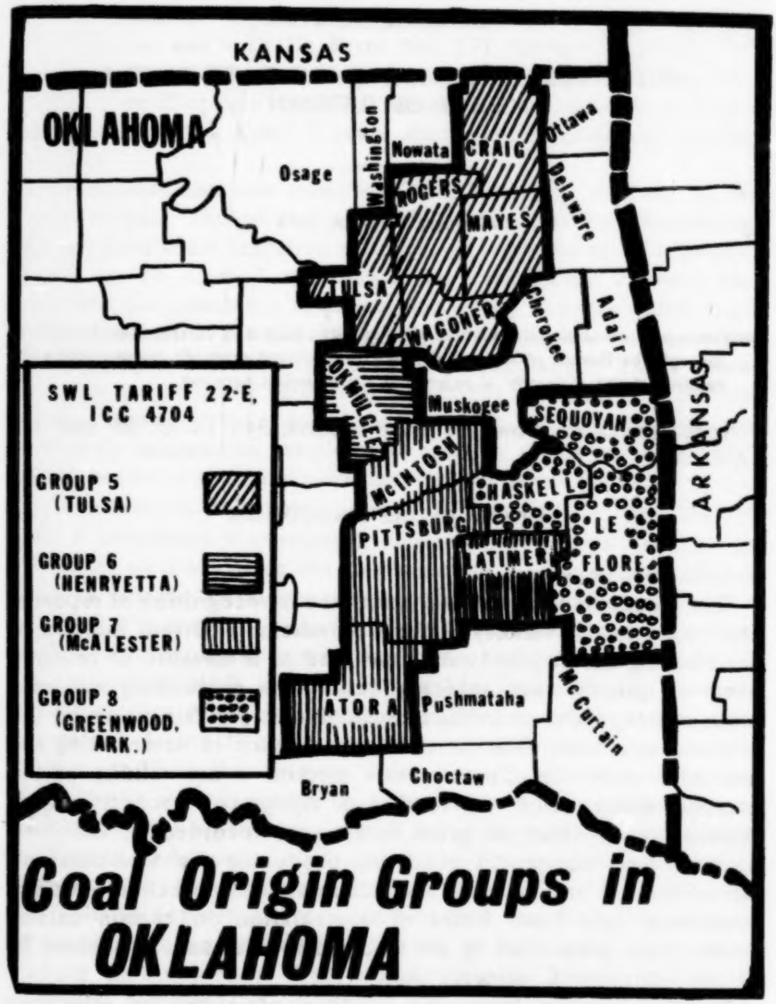
MAP NUMBER XXXII


MO.
ARKANSAS
OKLA.
TEXAS
LA.
JOHNSON
POPE
Van Buren
FRANKLIN
SEBASTIAN
LOGAN
Conway
YELL
Perry
SCOTT
POLK
Montgomery
Garland
HOWARD
Pike
SEVIER
LITTLE RIVER
COAL ORIGIN GROUPS IN ARKANSAS
SWL Tariff 22-E, ICC 4704
Group 8 (Greenwood, Ark.)
Group 9 (Spadra, Ark.)

MAP NUMBER XXXIII


IOWA
COAL ORIGIN GROUPS in KANSAS & MISSOURI
NEBRASKA
PUTNAM
MACON
BUCHANAN
PLATTE
CLAY
Kansas City
RANDOLPH
JACKSON
BOONE
KANSAS
MISSOURI
HENRY
Linn
BATES
ST. CLAIR
Bourbon
VERNON
Crawford
BARTON
Montgomery
Labette
Cherokee
Joplin
GROUP 2 (Clinton, Mo.)
GROUP 3 (Rich Hill, Mo.)
GROUP 4 (Pittsburg, Ks.)
GROUP 5
GROUP 6
GROUP 8
GROUP 15
OKLAHOMA
SWL TARIFF 22-E, ICC 4704
WTL TARIFF 475-D, ICC A-921
ARKANSAS

MAP NUMBER XXXIV


KANSAS
OKLAHOMA
Osage
Washington
Nowata
CRAIG
Ottawa
ROGERS
MAYES
Delaware
TULSA
WAGONER
Cherokee
Adair
OKMULGEE
Muskogee
SEQUOYAH
ARKANSAS
McINTOSH
HASKELL
PITTSBURG
LE FLORE
LATIMER
ATOKA
Pushmataha
McCurtain
Bryan
Choctaw
SWL TARIFF 22-E, ICC 4704
GROUP 5 (TULSA)
GROUP 6 (HENRYETTA)
GROUP 7 (McALESTER)
GROUP 8 (GREENWOOD, ARK.)
Coal Origin Groups in OKLAHOMA

EX PARTE NO. 271

NET INVESTMENT—RAILROAD RATE BASE & RATE OF RETURN

Decided March 3, 1975

Interim report discussing a preliminary 14-carrier analysis of certain class I railroads through the Bureau of Accounts' new computerized methods for evaluating the validity of the railroads' accumulated depreciation account.

Appearances as shown in prior reports, 345 I.C.C. 55 and 340 I.C.C. 829.

REPORT OF THE COORDINATOR

HARDIN, *Commissioner:*

This proceeding was initially instituted in recognition of repeated challenges to the validity of the Commission's current method of determining the railroad rate base used as a measure of revenue needs in general rate increase cases. The proceeding was subsequently expanded to include consideration of a fair return on the selected rate base. One factor of significance in determining the rate base under the Commission's method is the validity of the accrued depreciation on road and equipment property.[1] This account is an offset to gross investment recorded in the road property and equipment accounts, producing the Commission's currently used original cost, less accumulated depreciation, or net investment rate base. Rates of depreciation on certain carrier property are prescribed by the Commission pursuant to section 20 of the Interstate Commerce Act.

The Commission from time to time prescribes or otherwise authorizes a composite annual percentage rate of depreciation for each depreciable property account. To assist in the administration of this authority, the Commission's Bureau of Accounts has had in progress a study of the validity of accrued depreciation as recorded in the railroads' books of account. At the direction of the Coordinator, and with Ex Parte No. 271 funds, the Bureau has accelerated its study, primarily through computerization and new applications of certain statistical methods.[2] As a result, this project will be completed about 5 years ahead of the originally planned schedule.

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[1] 49 CFR 1201, Account 735, Accrued Depreciation—Road and Equipment. See also Instructions for Depreciation Accounts, 5-1 Method.

The Bureau has now completed a preliminary analysis on the results to date. The preliminary analysis describes the methodology and presents some tentative conclusions, attached as an appendix, based on 14 class I railroads. The preliminary analysis also considers the possibility of accounting policy changes which could make accounts 3, 5, and 39 (grading, tunnels and subways, and public improvements-construction) depreciable. These three accounts are presently subject to retirement accounting. According to the summarization and based on the present limited and admittedly nonrandom sample of 14 carriers, the amounts recorded on the books of the 14 studied carriers for accumulated depreciation are overstated by approximately $269 million when compared with a calculated accumulated depreciation derived through the statistical methods using the Commission's new computerized data bank of relevant property records. However, a different result is obtained if accounts 3, 5, and 39 (grading, tunnels and subways, and public improvements-construction) are considered depreciable as the preliminary study indicates is possible. The study also discusses the possibility of accounting policy changes which would make accounts 3, 5, and 39 subject to retirement accounting and, on the basis of the 14 studied carriers, reflect that the present accumulated depreciation is understated by approximately $90 million.

This interim Coordinator's report is to inform parties concerning the Bureau of Accounts' study and the tentative results obtained as represented by the appendix. The information thus far assembled is insufficiently representative to warrant firm conclusions in respect to issues in this proceeding. However, it is deemed appropriate pending the completion of the study to provide an opportunity for parties to comment on or express any views with respect to the matters set forth in the appendix by April 28, 1975.

An appropriate order will be entered.

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[2] This study was referred to by the Commission's Special Projects Counsel in his October 23, 1974 opening statement in this proceeding.

APPENDIX

Preliminary analysis of accrued depreciation on railroad equipment and road property

There are 70 class I railroads subject to regulation of the Interstate Commerce Commission. For costing purposes[1] these class I railroads are grouped into 6 regions. The 14 railroads studied for this report are grouped by region as follows:

Region 2

Baltimore and Ohio Railroad Co.
Chesapeake and Ohio Railway Co.
Chicago and Eastern Illinois Railroad Co.
Norfolk and Western Railway Co.
Missouri-Illinois Railroad Co.

Region 4

Alabama Great Southern Railroad Co.
Georgia Southern and Florida Railway Co.

Region 5

Kansas City Southern Railway Co.
Texas and Pacific Railway Co.
Texas Mexican Railway Co.

Region 6

Burlington Northern, Inc.
Colorado and Southern Railway Co., The
Northwestern Pacific Railroad Co.
Southern Pacific Transportation Co.

The 14 carriers studied for this preliminary analysis represent about 20 percent of the Nation's class I railroads and over 30 percent of the Nation's railroad mileage. The entire 14 are analyzed as a group in table 1. Since the railroads in Regions 2 and 6 are substantially representative of the carriers in those regions, they are separately analyzed in tables 2 and 3.

General observations.—Table 1 shows that the recorded accumulated depreciation on the 14 class I carriers' books is higher by about $269 million than the calculated accumulated depreciation using the new statistical methods. This is not a material variance when compared with the present accumulated depreciation figure on the railroads' books of about $2.8 billion and a total gross investment of about $9 billion. The accumulated depreciation presently on the books exceeds the newly calculated accumulated depreciation by approximately 11 percent.

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[1] See *Rail Carload Cost Scales, 1972,* Interstate Commerce Commission, Statement No. 1C1-72, Washington, D.C.

Because of possible accounting policy changes making grading, tunnels and subways, and public improvements-construction accounts (accounts 3, 5, and 39) depreciable, in lieu of retirement accounting, the three tables consider this possibility and present slightly different results. If accounts 3, 5, and 39 are considered depreciable property, then the newly calculated accumulated depreciation exceeds the recorded accumulated depreciation on the books by some $90 million or about 3 percent. Separate study of Regions 2 and 6 in tables 2 and 3 produces a similar pattern.

Some of the parties to Ex Parte No. 271, Net Investment—Railroad Rate Base & Rate of Return, have contended that the roadway account fails to reflect an adjustment for depreciation not accrued prior to January 1943, when depreciation accounting was first required by the Commission. The preliminary results of testing the new methods herein, however, show that presently recorded accumulated depreciation is greater than the amount calculated under the new methods. What appears to have happened in account 6, bridges, trestles, and culverts, and account 16, stations and office buildings, is that the actual service lives have been longer than the prescribed depreciation rates assumed for accounting purposes. All regions studied except Region 2 for account 16, stations and office buildings, show this pattern. For Region 2, the accumulated depreciation on the books for accounts 6 and 16 is less than that calculated under the new methods.

Other major accounts, such as account 26, communication systems, and account 27, signals and interlockers, followed the general pattern of the recorded accumulated depreciation being larger than that derived from the present study of the property's actual service lives. This appears to be caused in part by salvage values being higher than estimated when property in these accounts has been retired. There have been extensive retirements in these two accounts due to technological changes, such as the general change from copper wire-based communications gear to microwave. This pattern is followed in all three tables. Some recorded provisions for accumulated depreciation are shown to be higher than those derived from the present study as the result of mergers and reevaluations of the accumulated depreciation account.

These tentative conclusions are subject to revision after reviewing the entire study group of class I railroads under the new methods. Different railroads have different policies on replacement, maintenance, innovation, and use of available technology. Any proposed changes on individual carriers' books as a result of the new studies will be subject to comment prior to being implemented.

Status of property presently classified as nondepreciable.—Account 3, grading, and account 5, tunnels and subways, have generally been classified as nondepreciable. This has been partly on the assumption that this type of property is physically restorable through regular maintenance and that the service life is, therefore, incapable of being measured. This preliminary study shows that, on the contrary, significant retirements of such property have occurred and that such property is capable of having its service life measured with a reasonable degree of accuracy using statistical methods applied to the new computerized data base compiled by the Commission for the relevant 1914-1972 property records. Since the property appears to have reasonably measurable service lives, it might well be desirable for the Commission to consider reclassifying accounts such as 3 and 5 as depreciable property. A possible inclusion of a new provision for past accumulated depreciation in these two accounts for the purposes of this proceeding might well be desirable in calculating a valid rate base for the purpose of calculating an appropriate rate of return.

Basis for new accumulated depreciation figures.—The present provisions for accumulated depreciation on the carriers' books are calculated on a straight line average life procedure, a method based on estimated average service lives including possible salvage value upon retirement. Through statistical analysis of a large body of data, it is possible to analyze service life of groups of property in order to determine appropriate depreciation rates. The statistical techniques used are derived from actuarial methods used by insurance companies in setting life insurance premiums. A curve of service life over time can be fitted to the actual data with considerable mathematical precision. Fitting the numerous available statistical curves has largely been made possible here through computerization. Manual computation would be virtually impossible on a data base embracing all or significant groups of class I railroads of the United States. The best fitting curve does not match exactly what has happened in the accounts on a year-by-year basis, but for selected periods of time can give a basis for good projections of service life for the future for adjustments to the various accumulated depreciation accounts.

Estimates of average service lives.—This preliminary analysis is primarily concerned with more effective methods of estimating service lives, and determining appropriate depreciation rates and associated provisions for accumulated depreciation. The average service lives assumed for accounting purposes are sometimes at substantial variance with the actual experienced service lives of the property considered. Sometimes the dollar investment in certain property is depreciated long beyond the average service life of the physical property. The use of betterment accounting and retirement rules based on minimum dollar amounts, for example, for the grading, or fences and signs accounts, may cause extensions of life for accounting purposes which would appear to be unreasonable when compared with normal engineering or operating experience with the actual physical property. More sophisticated methods of calculating service lives could result in more accurately estimated service lives. The usual statistical methods used as a basis for forecasting service lives are the actuarial method and the simulated plant record (SPR) method. Both methods are used in this preliminary analysis as explained below. When combined with appropriate engineering judgment, either method can yield sound indications of the life characteristics for the property being studied.

Actuarial method for equipment.—The complete data required for an actuarial analysis are readily available for the records kept by individual carriers. Thus an actuarial analysis is applied to the equipment accounts. Currently, a review is conducted every 5 years of the railroads' equipment depreciation rates. A data bank for each railroad is being created which will only need to be updated since the last review. An actuarial analysis will be periodically performed on the data bank to come up with appropriate service lives and resulting depreciation rates (also considering estimated salvage values). An estimate of accumulated equipment depreciation can also be made for any particular point in time.

The procedures used in life analysis of equipment are, in general, computerized adaptations of the retirement rate method. This method is widely used to analyze the life of industrial properties and is based on analysis of the property retirements in relationship to the property in service. Additionally, the program is designed to provide other information to assist in determining a measure of average life, such as average age of retirements on an annual and composite basis and average age of survivors by year of installation.

The ultimate determination of estimated service life and salvage value to be used for a particular account of an individual company is based on judgment. Criteria for judgment in these instances are specific engineering and operating information concerning the nature and character of the property under review and observed experience.

An estimate of accumulated depreciation for each of the primary equipment accounts is calculated by using the life expectancy and average life applicable to the surviving dollars in each vintage (age distribution) adjusted for salvage. An estimate of the reserve ratio for each vintage is generated and applied as of a given date to produce an estimate of the percent of total past accumulated depreciation for an account. The estimate derived from this percent is compared to the actual accumulated depreciation balance reported in the Annual Report to the Commission for review of the differences.

SPR method for road property.—Of the two principal statistical methods for analyzing data on service life, the actuarial method requires detailed records of the age of each retirement from each year's (vintage) additions and any other accounting activities such as transfers, likewise detailed according to the vintage and year in which the activity took place. The compilation of such data, if not as readily available as it is for railroad equipment, is time consuming and expensive. However, the SPR method requires the additions and retirements by year and SPR proved to be a feasible analytical method for the roadway accounts. The necessary data is reported annually by the railroads to the Commission. The data need to be reviewed and coded for gross transfers, acquisitions and mergers, and similar accounting activities in the year of occurrence.

Use of the SPR method results in a statistical analysis of accounting experience which becomes a basis for judging life characteristics, including average life. This conclusion then is the basis for determining appropriate depreciation rates and the associated accumulated provisions for depreciation.

The results of an SPR analysis are a series of stub survivor curves which can be a basis for estimating generalized life characteristics, applicable on the average to the years (vintages) being studied. SPR analysis and the resulting estimates reflect the experience of the property as accounted for according to the accounting rules prescribed by the Commission. The life characteristics are related to the units or groups as required by the system of accounts, and then the appropriate depreciation rates are applied.

To recap, the SPR method is used for the roadway accounts in this study because it is an acceptable method for statistically analyzing life data used both by regulatory commissions and by industry at large. It is selected for use here because the needed roadway data are readily available without undue delay and expense, and because data processing programs were available that could be adapted to permit an SPR analysis within a reasonable period of time.

Prior to January 1, 1943, investment in road property was recovered only through retirement accounting, rather than through depreciation accounting. Retirement accounting involves a single charge to expenses at the time property is retired, rather than the series of equal periodic charges to expenses required under straight line depreciation accounting. Depreciation accounting of certain roadway accounts was required from January 1, 1943-onward by the Commission. However, no attempt was made in 1943 to establish past accumulated depreciation accounts because a reconstruction of the year-by-year accounts back to about 1914 would have been required, a laborious and time-consuming manual task. The SPR method does not require such a laborious reconstruction of accounts to derive a valid estimate of past accumulated depreciation for any year from the newly compiled computerized 1914-1972 data bank. The new data bank permits the Bureau now to do statistically what it was unable to do in the early 1940's. As indicated earlier, some parties to Ex Parte No. 271 have contended that net investment base is overstated due to the absence of an adjustment in the reserve to reflect depreciation not accrued prior to January 1, 1943. A determination of this point would now appear to be possible for the roadway accounts through use of the SPR analytical method and the new computerized data bank.

The statistical treatment of specially coded data involves the check by the computer program of the additions, retirements, and balances by a factor representing the percent change to the account balance each year. This factor helps to identify unusual conditions that would have a tendency to distort the results if left untouched. Included in this category are sales of a large magnitude, acquisition of companies or large segments of companies, transfers usually created by changes in the account nomenclature and other similar adjustments.

After all corrections and adjustments are made, the program automatically rechecks the balance of the account. Finally, the computer prints a listing of the additions, retirements, and balances by year and generates an output data file in a proper format. This file, created by successful completion of the edit sequence, is the basic input into the simulation analysis program itself.

The SPR program uses a method that simulates the annual balances of the account over a selected period of time by repeated tests of the actual data against a family of survivor curve characteristics. This process is repeated for several different survivor curves until a particular curve at a given life is determined which most nearly duplicates the actual physical plant balances over a period of years. The determination is based on the curve producing the minimum sum of squared differences between the simulated balances and the actual balances over the selected analysis period. The program will select the "best fit" of data from each of the families of the commonly used Iowa curves. A sample of the program analysis format follows:

Depreciation study data simulated plant record method—
Interstate Commerce Commission

99999 ALL U.S. CARRIERS EXTRACTED FROM ICC STATISTICS
16 STATION AND OFFICE BUILDINGS

SIMULATED BALANCES METHOD

Analysis band : 1954 thru 1972 Interval between test points : 2

Dispersion	Mean	Sum of squared differences	Index of variation	Conformance index	Retirement experience index
	(years)				
S2	55.8	0.1135E+17	33	30	71.78
S3	55.5	0.3639E+16	18	55	78.24
S4	56.4	0.1796E+17	42	23	84.52
L3	58.3	0.1469E+17	38	26	70.78
L4	56.8	0.8863E+16	29	34	79.08
L5	56.5	0.4699E+17	68	14	86.90

Depreciation study data simulated plant record method—Interstate Commerce Commission—Continued

99999 ALL U.S. CARRIERS EXTRACTED FROM ICC STATISTICS
16 STATION AND OFFICE BUILDINGS

SIMULATED BALANCES METHOD

Analysis band : 1954 thru 1972 Interval between test points : 2

Dispersion	Mean	Sum of squared differences	Index of variation	Conformance index	Retirement experience index
	(years)				
R2	54.3	0.1124E+17	33	30	70.19
R3	54.5	0.1652E+16	12	83	77.84
R4	55.3	0.1265E+17	35	28	84.56
B1	60.3	0.6774E+17	81	12	51.53

The output of the simulation program consists of a data sheet and from one to five life analyses. The data sheet includes a complete listing of the additions, retirements, and balances, as well as various account data such as the date of the first addition, account file name, date of last balance, and other similar information.

The simulation study lists the results of each life curve analysis and includes other statistical measures in permitting a reasonable conclusion on proper life characteristics, including average life. For each life curve tested the curve is shown along with the associated average service life which produced the minimum sum of squared differences from the actual balances. The value of the sum of squared differences is shown for each curve in addition to an Index of Variation, Conformance Index, and Retirement Experience Index. The best-fitting curve can be chosen by examining the Index of Variation or the Conformance Index. The lower the Index of Variation and the higher the Conformance Index, the better the simulation of account balances. The Retirement Experience Index indicates the portion of life cycle exposed to retirement during the analysis period.

An estimate of accumulated depreciation can be calculated from the characteristics of the selected survivor curve and average service life. This determination is made by multiplying the vintage addition by the appropriate percent surviving and reserve ratio to obtain the accumulated depreciation for survivors of that vintage. Summation of the vintage calculation is the calculated accumulated depreciation for the total account down to a particular point in time. The various reserve ratios are developed from the expectancy of the surviving property at each age and can be calculated from the selected survivor curve characteristics. The composite ratio for the account is developed by dividing the calculated accumulated depreciation by the current recorded balance in the accumulated depreciation account. A comparison of this calculated accumulated depreciation with the recorded accumulated depreciation provides the necessary information to identify potential variances.

The following tables represent consolidated statistics taken from the accumulated depreciation calculated and recorded for the 14 individual companies. The recorded accumulated depreciation was read directly from Annual Report Form R-1 as of December 31, 1972, and compared to the calculated accumulated depreciation developed from the computerized SPR program as of December 31, 1972.

TABLE 1.—*Comparison of recorded and calculated accumulated depreciation as of December 31, 1972 total—14 railroads (regions 2, 4, 5, and 6)*

Account No.	Title of account	Recorded	Calculated	Differences	
	Road	*(Dollars in thousands)*			
1	Engineering	$15,295	$36,034	$(20,739)	
2 1/2	Other R-o-W expenditures	803	805	(2)	
3	Grading	31,187	370,302	(339,115)	
5	Tunnels and subways	27,075	47,619	(20,544)	
6	Bridges, trestles, and culverts	287,543	164,689	122,854	
13	Fences, snowsheds, and signs	28,130	13,131	14,999	
16	Station and office buildings	110,510	89,635	20,875	
17	Roadway buildings	8,018	6,604	1,414	
18	Water stations	901	7,440	(6,539)	
19	Fuel stations	1,952	5,224	(3,272)	
20	Shops and enginehouses	60,206	66,933	(6,727)	
21	Grain elevators	(2,646)		(2,646)	
22	Storage warehouses	424	685	(261)	
23	Wharves and docks	6,797	5,212	1,585	
24	Coal and ore wharves	26,146	26,689	(543)	
25	TOFC/COFC terminals	2,599	2,599	-0-	
26	Communication systems	34,863	21,869	12,994	
27	Signals and interlockers	124,428	100,682	23,746	
29	Powerplants	1,477	1,984	(507)	
31	Power transmission systems	11,621	8,745	2,876	
35	Miscellaneous structures	2,836	2,426	410	
37	Roadway machines	51,443	29,244	22,219	
39	Public improvements—construction	37,335	36,942	393	
44	Shop machinery	33,876	30,626	3,250	
45	Powerplant machinery	5,865	5,628	237	
	Total road	908,684	1,081,727	(173,043)	
	Equipment				
52	Locomotives	682,413	620,921	61,492	
53	Freight train cars	1,146,787	1,138,430	8,357	
54	Passenger train cars	64,304	64,304		
55	Highway revenue equipment	20,280	14,798	5,482	
56	Floating equipment	17,925	17,925		
57	Work equipment	47,017	49,313	(2,296)	
58	Miscellaneous equipment	26,466	16,919	9,547	
	Total equipment	2,005,192	1,922,610	82,582	
	Total	2,913,876	3,004,337	(90,461)	(3%)
	Total (excluding 3, 5, and 39)	2,818,279	2,549,474	268,805	(11%)

TABLE 2.—*Comparison of recorded and calculated accumulated depreciation as of December 31, 1972—Region 2*

Account No.	Title of account	Recorded	Calculated	Differences	
	Road	*(Dollars in thousands)*			
1	Engineering	$2,887	$9,010	$(6,123)	
2 1/2	Other R-o-W expenditures	241	313	(72)	
3	Grading	9,606	144,549	(134,943)	
5	Tunnels and subways	8,428	25,172	(16,744)	
6	Bridges, trestles, and culverts	79,277	75,889	3,388	
13	Fences, snowsheds, and signs	6,011	3,175	2,836	
16	Station and office buildings	28,493	31,913	(3,420)	
17	Roadway buildings	2,072	2,245	(173)	
18	Water stations	(3,430)	2,627	(6,057)	
19	Fuel stations	(520)	2,467	(2,987)	
20	Shops and enginehouses	17,677	27,561	(9,884)	
21	Grain elevators	(2,646)	—	(2,646)	
22	Storage warehouses	422	683	(261)	
23	Wharves and docks	4,767	4,002	765	
24	Coal and ore wharves	15,127	20,631	(5,504)	
25	TOFC/COFC terminals	618	618	-0-	
26	Communication systems	7,690	6,839	851	
27	Signals and interlockers	46,851	42,341	4,510	
29	Powerplants	646	949	(303)	
31	Power transmission systems	6,082	4,917	1,165	
35	Miscellaneous structures	264	933	(669)	
37	Roadway machines	22,642	10,992	11,650	
39	Public improvements—construction	12,007	12,267	(260)	
44	Shop machinery	14,459	15,435	(976)	
45	Powerplant machinery	3,006	3,169	(163)	
	Total road	282,677	448,697	(166,020)	
	Equipment				
52	Locomotives	255,499	217,203	38,296	
53	Freight train cars	553,363	525,062	28,301	
54	Passenger train cars	4,110	4,110	-0-	
55	Highway revenue equipment	7,218	5,443	1,775	
56	Floating equipment	17,917	17,917	-0-	
57	Work equipment	19,654	21,488	(1,834)	
58	Miscellaneous equipment	5,739	4,636	1,103	
	Total equipment	863,500	795,859	67,641	
	Total	1,146,177	1,244,556	(98,379)	(8%)
	Total (excluding 3, 5, and 39)	1,116,136	1,062,568	53,568	(5%)

TABLE 3.—*Comparison of recorded and calculated accumulated depreciation as of December 31, 1972—Region 6*

Account No.	Title of account	Recorded	Calculated	Differences	
	Road	*(Dollars in thousands)*			
1	Engineering	$11,785	$25,415	$13,630)	
2 1/2	Other R-o-W expenditures	470	433	37	
3	Grading	19,720	203,403	(183,683)	
5	Tunnels and subways	18,647	22,447	(3,800)	
6	Bridges, trestles, and culverts	189,758	73,958	115,800	
13	Fences, snowsheds, and signs	20,818	9,298	11,520	
16	Station and office buildings	78,021	53,311	24,710	
17	Roadway buildings	5,880	4,094	1,786	
18	Water stations	4,252	4,505	(253)	
19	Fuel stations	2,278	2,260	18	
20	Shops and enginehouses	39,896	34,513	5,383	
21	Grain elevators	--------	--------	--------	
22	Storage warehouses	2	2	--------	
23	Wharves and docks	2,030	1,210	820	
24	Coal and ore wharves	11,019	6,058	4,961	
25	TOFC/COFC terminals	1,787	1,787	--------	
26	Communication systems	25,845	13,895	11,950	
27	Signals and interlockers	67,549	49,810	17,739	
29	Powerplants	798	983	(185)	
31	Power transmission systems	4,670	3,250	1,420	
35	Miscellaneous structures	2,268	1,287	981	
37	Roadway machines	26,554	16,537	10,017	
39	Public improvements—construction	23,196	23,045	151	
44	Shop machinery	18,900	13,514	5,386	
45	Powerplant machinery	2,815	2,326	489	
	Total road	578,958	567,341	11,617	
	Equipment				
52	Locomotives	397,322	377,460	19,862	
53	Freight train cars	557,783	578,695	(20,912)	
54	Passenger train cars	60,334	60,334	-0-	
55	Highway revenue equipment	13,062	9,355	3,707	
56	Floating equipment	--------	--------	--------	
57	Work equipment	26,124	26,124	-0-	
58	Miscellaneous equipment	20,076	11,915	8,161	
	Total equipment	1,074,701	1,063,883	10,818	
	Total	1,653,659	1,631,224	22,435	(1%)
	Total (excluding 3, 5, and 39)	1,592,096	1,382,329	209,767	(15%)

GLOSSARY OF TERMS

Conformance Index

An indicator of the "goodness-of-fit" of the selected curve to the data in relation to the size of the account. The higher the index the better the fit of the selected curve.

Dollars Surviving by Vintage

Original investment in assets remaining in service as of a given date by year of installation.

Index of Variation

An indicator of the "goodness-of-fit" of the selected curve to the data in relation to the size of the account. The value is 1,000 times the inverse of the Conformance Index. The lower the index the better the fit.

Life Characteristic Indicator

The indication of average service life of a group of assets in addition to the manner in which the property is being retired, expressed in terms of the Iowa State family of survivor and frequency curves.

Retirement Experience Index

An indicator of the adequacy of the experience represented by the data in the account. The value represents the percentage of the life cycle represented by the selected curve and average life.

Retirement Rate Method

A systematic actuarial method for calculating property survivor curves that is based on both property retired and property remaining in service.

Stub Survivor Curve

A curve representing a group of assets which does not extend to zero percent surviving because of a lack of sufficient retirement data on the longer-lived units.

EX PARTE NO. 270 (SUB-NO. 1A)

INVESTIGATION OF RAILROAD FREIGHT RATE STRUCTURE—EXPORT-IMPORT RATES AND CHARGES—PACIFIC COAST

Decided December 12, 1975

Upon investigation into the export-import rates and/or charges to and from the Pacific coast ports and other recognized groups of ports, found:

1. **That there is no uniformity in port terminal charges at the different port ranges.**
2. **That there is no existing, established, recognized, or prescribed relationship of rates on export-import transcontinental traffic between the north Pacific coast ports, on the one hand, and, on the other, the Atlantic or gulf coast ports.**
3. **That the rates applicable to export-import traffic between north Pacific coast ports and overland common point (OCP) territory have not been shown to be in violation of sections 1, 2, or 3 of the Interstate Commerce Act.**
4. **That existing export rates on wheat from origins in North Dakota to the north Pacific coast ports have not been shown to be excessively and unreasonably high, in violation of section 1(5) of the act.**
5. **That the existing inverse rate structure on export wheat from origins in western Minnesota, eastern Montana, North Dakota, and northern South Dakota to the north Pacific coast ports is unjust and unreasonable to the extent these rates exceed a rate of 92.5 cents per hundred pounds at the Ex Parte No. 267-B level, plus subsequent authorized general increases, unless respondents show cause to the contrary within 30 days from the date of service of this report.**
6. **That the proposed prescribed maximum rate will be compensatory and with the addition of subsequently authorized general increases will be just and reasonable and should take effect for a period of 1 year.**
7. **Show cause order entered.**

H. E. Franklin, Jr., William H. Grady, R. L. Henry, Frank E. Larwood, and *Milton A. Mowat* for north Pacific coast petitioners.

Gene J. Carroll, John I. Finsness, and *George H. Morin* for North Dakota petitioners.

James R. Cunningham, Thomas W. L[illegible]nch, and *A. G. Duclos* for interveners in support of north Pacific coast petitioners.

Curtis H. Berg, John L. Burchell, George C. Inman, Jr., Richard S. Kopf, Frederick G. Pfrommer, William R. Power, Howard E. Roos, J. Fred Simpson, and *Walter G. Treanor* for railroad respondents.

W. H. Meryman for California Association of Port Authorities.

G. K. Winn for Lake Charles Harbor and Terminal District.

Douglas W. Binns and *Arthur L. Winn, Jr.*, for Port of New York Authority.

Charles M. Pearson for U.S. Department of Agriculture.

Bernard A. Gould and *James R. Taylor* for Bureau of Enforcement, Interstate Commerce Commission.

REPORT AND ORDER OF THE COMMISSION

BY THE COMMISSION:

Exceptions to the initial decision of the Administrative Law Judge were filed separately by the respondents[1] and the Bureau of Enforcement. North Dakota[2] petitioners and north Pacific coast[3] petitioners each filed a reply. Our conclusions differ in part from those recommended. Exceptions and requested findings not specifically discussed in this report nor reflected in our findings or conclusions have been considered and found not justified or not necessary for the proper disposition of this proceeding.

The basic facts were set forth accurately and in detail by the Administrative Law Judge. Accordingly, they will be restated in this report only insofar as is necessary for a clear understanding of the issues presented. However, for convenient reference, appendix A contains the Administrative Law Judge's summary of the evidence presented in this proceeding.

BACKGROUND OF THE PROCEEDING

By order dated December 11, 1970, the Commission instituted Ex Parte No. 270, Investigation of Railroad Freight Rate Structure, under the authority of section 13(2) of the Interstate Commerce Act. In response to that order various port interests on the Great Lakes complained that the export-import rates to and from their ports had become distorted in relation to corresponding rates to and from other ports, and that outstanding Commission orders were thereby ignored.

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[1] Respondents are the U.S. railroad voting members of the Trans-Continental Freight Bureau. They are: The Atchison, Topeka and Santa Fe Railway Company; Burlington Northern, Inc.; Chicago, Milwaukee, St. Paul and Pacific Railroad Company; Southern Pacific Transportation Company; Union Pacific Railroad Company; and The Western Pacific Railroad Company. In addition, Burlington Northern, Inc., on its own behalf and on behalf of the Chicago, Milwaukee, St. Paul and Pacific Railroad Company and the Soo Line Railroad Company participated in opposition to the relief requested by the North Dakota petitioners.

[2] The North Dakota petitioners are: Public Service Commission, State of North Dakota and North Dakota State Wheat Commission.

[3] The north Pacific coast petitioners are: Northwest Marine Terminal Association, Inc.; Oregon Public Utilities Commissioners; Portland Freight Traffic Association; Puget Sound Traffic Association; and Washington Utilities and Transportation Commission. They were supported by the Ports of Longview, Portland, Tacoma, and the Pacific Coast Association of Port Authorities.

Subsequently, in *Increased Freight Rates, 1970 and 1971*, 339 I.C.C. 125, decided March 4, 1971, the Commission referred to the contentions of Great Lakes and Pacific coast port interests that percentage rate increases varying by territories and the absence of any previously prescribed relationships involving those ports, which relationships otherwise were required to be observed, caused unjust discrimination and undue prejudice and preference.

Upon filing of the schedules establishing the general increases on export-import traffic, protests were registered by the Pacific coast ports and other interests urging that authorized percentage increases in export-import rates had widened the spread in their rates over those to and from competitive ports, thus distorting previous relationships.

Based on the positions expressed by the Great Lakes and Pacific coast port interests that there was reason to believe that certain export-import rates and charges to and from these ports may be unjust and unreasonable, unjustly discriminatory, or unduly prejudicial and preferential in violation of sections 1, 2, or 3 of the act, or otherwise unlawful, the Commission, by order dated April 19, 1971, on its own motion, instituted an investigation Ex Parte No. 270 (Sub-No. 1), Investigation of Railroad Freight Rate Structure—Export-Import Rates and Charges, concerning the export-import rates and/or charges to and from (1) the Pacific coast ports, on the one hand, and, on the other, other recognized groups of ports, and (2) the Great Lakes ports, on the one hand, and, on the other, other recognized groups of ports. All common carriers by railroad subject to the jurisdiction of the Commission were made respondents in the proceeding.

Following a prehearing conference at Chicago, Ill., on June 30, 1971, an order dated August 10, 1971, was entered designating all parties seeking affirmative relief "petitioners," and directing them to file verified statements containing the evidence upon which they relied to make a prima facie case for the relief sought.

By order dated March 31, 1972, the Commission granted petitions of certain Pacific coast and Great Lakes port interests seeking separation of the issues concerning the Pacific coast ports from those of concern to the Great Lakes ports. The order noted that while the Great Lakes ports were concerned primarily with the rate *structure* to and from those ports in relation to the corresponding rate structures to and from other ports, in contrast, the Pacific coast ports contend that authorized percentage increases in export-import rates have widened the spread in their rates over those to and from competitive ports, distorting previous relationships. Thus, the issues of concern to the Pacific coast ports were separated for determination in Ex Parte No. 270 (Sub-No. 1A), Investigation of Railroad Freight Rate Structure—Export-Import Rates and Charges—Pacific Coast, and the issues concerning the Great Lakes ports were separated for determination in Ex Parte No. 270 (Sub-No. 1B), Investigation of Railroad Freight Rate Structure—Export-Import Rates and Charges—Great Lakes. The Commission's Bureau of Enforcement was directed to participate in each proceeding for the purpose of developing the records.

In this proceeding, hearings were held in Seattle, Wash., and San Francisco, Calif., following the submittal of verified statements by petitioners and respondents. The California ports did not actively participate at the hearings, or seek relief. Accordingly, the Pacific coast port interests will be referred to herein as the north Pacific coast petitioners. Subsequently, briefs were filed by the parties and the Commission's Bureau of Enforcement.

CONTENTIONS OF NORTH PACIFIC COAST PETITIONERS

North Pacific coast petitioners allege that recent railroad rate increases on a percentage basis have distorted previous relationships between the transcontinental rates applied to export-import traffic moving through Pacific coast ports and the rates provided to and from competitive ports; that an unjust and unreasonable rate application resulted from these increases; that sections 1, 2, and 3 of the act were violated; and that outstanding Commission orders are being ignored by the rail carriers.

Petitioners' allegations are premised upon our language regarding export-import rates in *Increased Freight Rates, 1970 and 1971*, 339 I.C.C. 125. There we found, *inter alia*, at page 188 that:

> (4) All existing port relationships duly established by order of the Commission or recognized customs of the trade shall be maintained and preserved. Any disruption in such relationships arising out of the publication of tariffs pursuant to authority herein granted shall be promptly corrected.

Accompanying orders provided as follows:

> *It is further ordered*, That in making effective any increase in rates and charges herein authorized, the respondents be, and they are hereby, required to protect and

> retain all existing port relationships and to apply any such increases on export or import traffic subject to the limitations provided in this report.

These petitioners interpret this language to mean "all existing port relationships or recognized customs of the trade shall be maintained and preserved." When reference is made to port relationships, petitioners believe this means a competitive relationship and that the proper relationship of export-import freight rates is the level of rates which prevailed after the Ex Parte No. 256 general increase which became effective June 16, 1968. This date was selected because the relationships had remained stable for an extended period of time. During that time transcontinental rail carriers voluntarily established a vast number of rates on many commodities which were structured to provide these carriers the opportunity to move traffic to west coast ports. These rates were allegedly maintained for a period long enough for the trade and commerce to rely upon them. According to petitioners, these rates were then disrupted by subsequent general increases authorized on a percentage basis without preserving and maintaining the prior relationships.

Petitioners do not assail the level of the export-import rates nor do they propose prescribed rates. They recognize the necessity for the rail carriers to freely establish rates in order to remain competitive for traffic. The petitioners assert that there are many reasons why a shipper located east of Nebraska, for example, would elect to use Pacific coast ports despite a disparity in the rail rate, such as time in transit, service considerations, and inventory costs. It is urged that the Commission designate a date and whatever differential was in effect at that time between the export-import rates through the gulf ports and the rates through Pacific coast ports be restored and maintained. Moreover, the Commission is requested to find that a rate relationship did exist on export-import traffic between the Pacific coast ports and other port ranges, that the relationship has been unduly disturbed, and that the relationship should be restored to excise the distortions caused by across-the-board percentage general increases.

CONTENTIONS OF NORTH DAKOTA PETITIONERS

The North Dakota petitioners contend that the export wheat rates from North Dakota origins both eastbound and westbound are excessive and unreasonably high in violation of section 1(5) of the act; that the existing "inverse" rate structure on westbound export wheat shipments bears no relation to cost and discriminates against western North Dakota shippers; and that the eastbound and westbound export wheat rate structures bear no relationship to each other and are unduly discriminatory. These petitioners request either a new distance related rate structure, or the restoration of the previous rate relationship between the gulf ports and the north Pacific coast ports. They particularly oppose the inverse rate structure which has higher rates in effect for westbound export shipments of wheat from western North Dakota origins, than from eastern North Dakota origins.

THE INITIAL DECISION

In his initial decision served November 26, 1973, the Administrative Law Judge found, in regard to the North Pacific coast port contentions: that there is no uniformity in port terminal charges at the different port ranges; and that there is not now nor has there ever been an existing, established, recognized, or prescribed relationship of rates on export-import transcontinental traffic between the north Pacific coast ports, on the one hand, and the Atlantic or gulf coast ports, on the other hand. Additionally, the Administrative Law Judge found that petitioners' mathematical demonstration that the application of percentage rate increases has widened the spread between rates to and from the Pacific coast, on the one hand, and those to and from other ports, on the other hand, did not establish that the increased transcontinental rates are in excess of a maximum reasonable level under section 1 of the act. Furthermore, it was concluded that the assailed rates were not shown to be unjustly discriminatory, or unduly prejudicial and preferential in violation of sections 2 and 3, respectively.

However, despite the foregoing findings, the Administrative Law Judge concluded that a general competitive relationship exists between the Pacific coast ports and the Atlantic or gulf coast ports. It was determined that this relationship had been disrupted in the past by the application of flat percentage general increases which resulted in greater aggregate rate increases to long-haul shippers such as those using the north Pacific coast ports. Although this past disruption had not been shown to result in unreasonable rates, it was concluded that the repeated application of flat percentage rate increases in the future would further distort the transcontinental rate structure and ultimately result in unreasonable rates. To forestall this eventuality, the Administrative Law Judge *recommended* that the railroads adopt and apply in future general rate increase proceedings a sliding scale. This sliding scale would assertedly result in lesser aggregate rate increases on long-haul and/or higher rated commodities, thus minimizing the disruption or distortion in general competitive relationships between rates to Pacific coast ports and the rates to other port groups. Finally, it should be noted that the recommended scale was not limited in application to export-import rates, since much of this traffic moves at domestic rates at present, and the competitive relationships existing between domestic rates would be subject to the same disruption or distortion and resulting unreasonableness which the recommended sliding scale was designed to alleviate. Therefore, the sliding scale was recommended to be used as a guide by the railroads in all future general rate increase proceedings.

Regarding the contentions of the North Dakota petitioners, the Administrative Law Judge found: that the existing export rates on wheat from origins in North Dakota to the north Pacific coast ports were not shown to be excessively and unreasonably high from a cost of service standpoint; that these export rates on wheat, although they substantially exceed fully allocated costs, were not shown to be in excess of a maximum reasonable level and thereby unjust and unreasonable; that changed conditions since adoption of the inverse rate structure have rendered that rate structure obsolete and distorted to the point where these rates are unjust and unreasonable when compared with other rates; that the inverse rate structure on wheat from origins in Minnesota, Montana, North Dakota, and South Dakota to north Pacific coast ports is unjust and unreasonable to the extent they exceed a rate of 92.5 cents per hundred pounds at the Ex Parte No. 267-B level, plus subsequently authorized general increases; and that the rate of 92.5 cents at the Ex Parte No. 267-B level from this area to north Pacific coast ports will be compensatory and with the addition of subsequently authorized general increases the rate will be just and reasonable.

EXCEPTIONS AND REPLIES

The respondent railroads agree with most of the recommended findings, stating that they are supported by the overwhelming weight of the evidence. However, respondents object to the recommendation that in applying for future general rate increases the railroads should use a sliding scale rather than seek flat percentage increases.

Respondents except to this recommendation or suggestion on the grounds that: (1) such a recommendation is improperly included within a formal finding; (2) since the report expressly found that the transcontinental export-import rates are lawful, there is no adequate explanation of the need, desirability, or justification for such a recommendation; and (3) the recommendation exceeds in geographical scope and subject matter the purpose and scope of this proceeding.

In addition, the respondents vigorously except to the findings that the inverse wheat rate structure is unjust and unreasonable to the extent that westbound wheat rates exceed a rate of 92.5 cents per hundred pounds at the Ex Parte No. 267-B level, plus subsequent authorized general increases and that such rate will be compensatory as well as just and reasonable. Specifically, respondents contend that these findings are inconsistent with the Administrative Law Judge's previous conclusion that the inverse rates were not shown to be excessively or unreasonably high, cost of service considered. Furthermore, this finding is assertedly predicated upon the erroneous premise that changes in the eastbound wheat rate structure, in the wheat supply, in the export subsidy program, and the different application of general increases to eastbound and westbound rates, have rendered the inverse rate structure unjust and unreasonable. In summary, respondents maintain that there is no evidence negating the efficacy and purpose of the inverse rate structure, or upon which to conclude that the changes enumerated above have distorted wheat market prices under the inverse rate structure and made the rates unjust and unreasonable.

The Bureau of Enforcement also filed exceptions to the initial decision, which substantially parallel those of the railroad respondents. The Bureau states that the record is devoid of any evidence to support the recommended sliding scale or any other scale for use in future general increase proceedings. It is also pointed out that the Administrative Law Judge found the present transcontinental export-import rates were not unlawful, but could become unreasonable at some future date due to percentage general increases. Assertedly, there is no evidentiary base for this conclusion and it is not clear whether the conclusion was predicated on future unreasonableness or possible prejudice to long-haul shippers. In any event, the Bureau contends that the recommended scale is irrelevant to the issues presented and would extend to and govern domestic rates which are outside the scope of this proceeding.

The Bureau also excepts to certain of the recommended findings regarding the inverse wheat rate structure. Specifically, it objects to the finding that subsequent changes have distorted the inverse rate structure to the point where these rates are unjust and unreasonable, and to the prescription of a maximum reasonable rate for westbound export shipments of wheat from origins throughout the producing area.

It is the Bureau's belief that the prescription of this maximum reasonable rate for westbound export wheat is intended to cure a prejudicial rate structure. However, it urges that the record does not permit a finding that the inverse rate structure has unduly preferred eastern North Dakota wheat growers and unduly prejudiced western North Dakota growers on these westbound movements. Therefore, the Bureau contends that these findings should be disavowed and the inverse rate structure on westbound export wheat should be maintained. Finally, it is urged that the changed conditions enumerated in the recommended report have had no disadvantageous effect upon western North Dakota wheat shippers and growers, and, therefore, will not support a finding that the inverse wheat rate structure is distorted or obsolete and unlawful.

In reply, north Pacific coast petitioners urge that the purpose of this proceeding is to examine the effect of percentage general increases upon the rates to and from Pacific coast ports and other groups of ports. It is asserted that such an investigation must look to the future and properly did so in this instance. Therefore, while the Administrative Law Judge found that existing export-import rates did not violate the act, he properly concluded that further unrestricted percentage increase would make these rates unreasonable. Petitioners state that the recommended sliding scale is a proper guide in these circumstances. In addition, petitioners argue that the Administrative Law Judge found prior percentage increases had distorted rates to the upper limit of the zone of reasonableness and provided a formula to guide the carriers to an increase program which would be acceptable to this Commission.

By separate pleading, North Dakota petitioners replied to the exceptions filed by respondents and the Bureau regarding the inverse wheat rate structure. These petitioners maintain that contrary to respondents' contention the recommended findings are not inconsistent. Petitioners view the finding that westbound export wheat rates under the inverse rate structure "are not shown to be excessively high, cost of service considered," as specifically relating to the eastern North Dakota rate of 92.5 cents per hundred pounds whereas the subsequent finding, that the inverse rates are unjust and unreasonable, assertedly relates to the westbound rates from western North Dakota origins. Thus, it is urged that these findings are completely consistent, correct, and should be affirmed. The petitioners also urge that the cost analysis which they presented in this proceeding fully supports the compensativeness of the prescribed 92.5-cent rate from the involved origins, and that subject to subsequently authorized general increases will result in a just and reasonable rate.

Responding to the Bureau's exceptions, petitioners state that they do not seek the same net price for all wheat growers in North Dakota regardless of their distance from the Minneapolis market. Instead, petitioners urge that since western growers suffer from an inherent distance disadvantage when shipping wheat eastbound, they should enjoy an inherent distance advantage over eastern growers when shipping wheat westbound. They agree that the purpose of the inverse rate structure was to maintain a constant value on wheat in North Dakota, i.e., the Minneapolis value. This allowed the Department of Agriculture to offer a constant subsidy at a level sufficient to attract wheat to the western markets from the entire producing area. A blanket rate westbound would require varying subsidy levels to attract wheat west as against the Minneapolis market. As there is now no subsidy program the west coast price of wheat will assertedly have to increase to obtain wheat from eastern growers and petitioners maintain that the westbound wheat rate structure should now be related to distance-cost so that western growers can effectively compete in this market and obtain the benefits of their geographic advantage in this competition. Finally, petitioners state that the Bureau ignores the fundamental concept that rates should reflect transportation circumstances and conditions.

DISCUSSION AND CONCLUSIONS

Our review of the extensive record in this proceeding, as well as the cogent explanation and discussion of positions contained in the initial decision, leads us to conclude that the Administrative Law Judge's findings are generally proper and correct except with regard to the recommended sliding scale which has not been adopted herein. Accordingly, the statement of facts, conclusions, and findings in the initial decision, except as specifically modified, will be affirmed and adopted as our own.

The north Pacific coast petitioners maintain that percentage rate increases have distorted previous relationships between the transcontinental rates applied to export-import traffic moving through Pacific coast ports and the rates applicable to and from competitive ports, resulting in unjust and unreasonable rates. The primary interest of these petitioners is export-import traffic moving to and from that part of the U.S. designated overland common point (OCP) territory which consists of numerous origin and destination points in the area east of and including North Dakota, South Dakota, Nebraska, Colorado, and New Mexico. Petitioners have demonstrated that the application of percentage rate increases results in greater aggregate rate increases on long-haul traffic than on short-haul traffic. When this fact is coupled with petitioners' contention that a relationship exists between export-import rates to Pacific coast ports and other groups of ports, it leads them to conclude that a disruption or distortion has been introduced into the export-import rate structure upsetting the relationship between port groups to their disadvantage.

However, the logical predicate for petitioners' contention has not been established on this record. Petitioners do not contend that a prescribed relationship of rates exists on OCP export-import traffic to or from Pacific coast ports with rates on similar traffic to other groups of ports. They specifically disavow such a contention and maintain the transcontinental railroads should remain free to establish competitive rates on export-import traffic. Instead, it is urged that such relationships were developed voluntarily by transcontinental rail carriers as a custom of the trade.

After discussing these contentions the Administrative Law Judge found, and we agree, that petitioners have not established that such a port relationship or custom of the trade exists between transcontinental rates on export-import traffic to or from Pacific coast ports, on the one hand, and other groups of ports, on the other. Thus, only a general competitive relationship exists between Pacific coast rates and the rates to other port groups.

It is clear then that the Administrative Law Judge's conclusion that these rates were being disrupted or distorted by percentage increases, and his recommendation that the railroads adopt a sliding scale in future general increase applications is based upon nothing more than the existence of a general competitive relationship between rates to different port groups. Such a relationship is too ephemeral and will not support maintenance of stable rate differentials between port groups.

In essence, petitioners do not contend that a port relationship exists which would result in fixed differentials between ports, but ask us to find that a competive relationship exists which requires maintenance of stable differentials unless competitive elements force the transcontinental export-import rates down. In our opinion only the most general competitive relationship can be said to exist between most, if not all, ports, localities, and producers. The mere existence of the possibility of competitive relationships has never been thought to justify or require the immobilizing of normal transportation ratemaking. In summary, absent a prescribed or customary relationship of rates between one port or group and another, there can be no disruption or distortion of rates which would justify the prescription of a method of general rate increases restricting the carriers' ratemaking freedom.

It is also argued that the application of horizontal percentage increases resulting in greater aggregate rate increases for long-haul shippers creates distortions in the rate structure which are per se unreasonable to these shippers. However, as aptly pointed out in the initial decision, petitioners' alternative of applying a maximum of 2 cents per hundred pounds per percentage point of increase would prefer long-haul shippers at the expense of short-haul shippers.

Concerned that repeated general rate increases authorized on a percentage basis will have a serious adverse effect on long-haul shippers, for example by excluding them from certain long distance markets, the Administrative Law Judge recommended as a guide for the railroads' use when making application for future general increases in rates a sliding scale.

Appendix B sets forth the sliding scale recommended as a guide for the use of the railroads in the future. It should be made clear at the outset that this recommended scale was not designed to prohibit the carriers from adjusting their rates in order to remain competitive.

The scale is based on cents per 100 pounds. Column A refers to the base rate or the rate per 100 pounds that exists at the time the carriers file their tariff of increased rates and charges for approval. The first rate block grades from 1 through 10 cents and under column B each rate would be increased 1 cent. The second block under column A, grades from 11 cents through 25 cents, which presents a block spread of 15 cents and each rate would be increased 2 cents. It will be noted that the base rates of 11 cents through 70 cents are in blocks of 15 cents each and each rate in those individual blocks would be increased 1 cent, respectively, as shown under column B. Base rates from 71 cents through 150 cents in column A are shown in block spreads of 20 cents and each rate within the block would be likewise increased by 1 cent as shown under column B. Base rates from 151 cents to the end of the scale shown under column A are in block spreads of 25 cents, and each rate in each block would be increased 1 cent, respectively, as shown under column B. With respect to base rates greater than the last rate shown in column A, the scale may be extended by forming blocks of 25 rates, each of which would be increased progressively by 1 cent over and above the last increase shown in column B.

In the event the carriers, due to their financial conditions, seek different increases in their respective territories in order to achieve the desired revenue to sustain them as viable carriers, this recommended scale could then be adjusted by the carriers themselves to fit their particular needs, keeping in mind, however, the basic scale as shown in the appendix. The scale compares to approximately a 6-percent increase. To adjust the scale to compare to a 3-percent increase, for example, the number of rates in each block would be increased another 20 or 25 rates. Stated another way, for an approximate 3-percent increase the block of rates would be doubled to compensate for the lesser increase of 3 percent or approximately half of the increase shown in the appendix. If, on the other hand, an approximate 9-percent increase would be considered necessary, the number of rates in each block shown in the appendix would be decreased in order to reflect the greater increase to be sought.

We also are concerned that continued railroad reliance upon horizontal percentage increases will have a serious and unfavorable impact on long-haul shippers. However, we are not convinced that the recommended sliding scale or any other scale that could be devised can or should be prescribed or specifically recommended without further review.

Ratemaking is a pragmatic business requiring the exercise of discretion as well as expert judgment and should not be frozen into a particular mold. In setting rates, carriers should consider, among other factors, the cost of transportation and the economic-social impact of a proposed action. Adoption of the recommended sliding scale would perpetuate some benefits to long-haul shippers and at the same time be somewhat detrimental to short-haul shippers. It, therefore, appears that the recommended sliding scale concept has some of the same inherent disabilities as continuing the present horizontal percentage increases.

Whether it is true or not, respondents filing of horizontal percentage increases without holddowns and exceptions conveys the impression that little or no consideration has been given to the possibility of diversion and/or decrease in traffic as shippers become unable to compete in certain markets. As previously stated, carriers should study the anticipated effects on traffic, long-haul as well as short-haul, before filing percentage general increase proposals. Absent a clear indication that such economic-social impacts have been fully considered, and the increase proposal so tailored to avoid as many adverse effects as possible, this Commission will have to suspend and investigate such proposals in detail, and impose holddowns, cents per hundredweight limitations and exceptions where necessary. Accordingly, we believe that initial resolution of this problem should be left to the carriers concerned, whose own best interests will be served by its fair and speedy disposition.

For the reasons heretofore stated, we conclude that adoption of the recommended sliding scale in this proceeding is not desirable. In view of this conclusion we will not further consider respondents' specific exceptions on this issue.

As previously noted, North Dakota petitioners are especially opposed to the inverse rate structure which applies to westbound shipments of wheat from origins in North Dakota and adjoining States. This rate structure has higher westbound rates in effect for western North Dakota wheat producers than for eastern North Dakota producers because of the manner in which these rates were established. The rail rate structure on eastbound shipments of wheat from North Dakota origins was prescribed in docket No. 1700-Part VII, *Grain and Grain Products*, 205 I.C.C. 301, 503, becoming effective on July 1, 1935. This rate structure consisted of domestic single-car point-to-point rates related to distance and decreasing in amount from west to east. In prescribing this rate structure, the Commission stated, at page 327:

> *** The only practicable test of reasonableness of the rate level on these commodities is the one of judgment of the regulating body upon all of the facts, circumstances, and conditions affecting both carriers and shippers. That standard underlies the rates herein prescribed.

Prior to publication of the inverse rate structure the westbound export wheat rates were linear, that is related to distance and increasing in amount from west to east. These rates apparently did not move the traffic. It is not clear whether this was a result of the transportation charges or the level of domestic wheat prices. However, both of these factors seem to have been critical. In response to grower and Department of Agriculture requests for an export rate the railroads published a rate of 95 cents from a large area of North Dakota and stations in Montana to north Pacific coast ports. This blanket rate allegedly was not low enough to move the wheat into the Pacific export market. Furthermore, it assertedly resulted in varying delivery prices at the Pacific coast ports which could not be overcome by Department of Agriculture flat subsidy payments.

Subsequently, the present inverse rate structure was adopted on westbound shipments of wheat from the primary producing area. These rates are single-line point-to-point rates with no relation to distance. In other words, these rates increase as the origin approaches the destination. The level of these rates was established on the basis of rail costs to Minneapolis plus barge costs from there to New Orleans.

Before establishment of the inverse rate structure in 1965, Minnesota, Montana, North Dakota, and South Dakota produced 97 percent of all hard red spring wheat grown in the United States. This premium wheat was building a large surplus with only a small amount moving to export. At this time the growing Far East market, especially Japan and the Philippines, was being supplied by Canadian wheat growers. However, the Japanese professed an interest in purchasing American hard red spring wheat if two essential conditions were met: (1) establishment of a price at north Pacific coast ports competitive with the price of Canadian wheat at Vancouver, British Columbia; and (2) assurance of a continuing adequate supply at that competitive price.

To meet the first conditon the Departmet of Agriculture established its subsidy program which in effect was a payment to the exporter of the difference between the domestic and export market price. This was required because Minneapolis is the price-setting market for grain elevators throughout the producing area. Thus, on any given day the Minneapolis price is the same for all wheat of comparable grade and quality. However, the elevator price or net return varies depending upon the amount of freight charges from origin to Minneapolis. The nearer Minneapolis, the less is deducted from the price to cover freight charges. Thus, elevator price or net return decreases as the distance from Minneapolis increases.

Effective June 11, 1965, the rail carriers published the inverse rate structure. This rate adjustment was approved by the

Commission's 371st supplemental Fourth Section Order No. 17200, *Grain and Grain Products Within the Western District,* dated June 8, 1965. In conjunction with the Department of Agriculture's constant subsidy program, this rate adjustment opened up the entire wheat producing area for export purchases in competiton with the Minneapolis domestic market. The rate adjustment resulted in the shipper receiving a return equal to that on a like shipment to Minneapolis and thus made a movement westbound feasible. Thus, the second condition of Japanesee purchasers was met by the opening of the entire producing area to export movements. Not incidentally, the level of this rate adjustment was also calculated so that the transcontinental rail carriers could obtain these export movements in competition with other carriers and port groups. The evidence shows that the inverse rate structure coupled with the subsidy program has been very effective in causing this grain to move westbound for export.

In his initial decision the Administrative Law Judge found that the present export rates on wheat from origins in North Dakota to the north Pacific cost ports are not excessively high from a cost of service standpoint. However, he also concluded that changed circumstances and conditions in the export wheat trade have rendered the inverse rate structure obsolete as well as unjust and unreasonable. Respondents contend that these findings are inconsistent, but we disagree. As the Administrative Law Judge's opinion so aptly illustrates, the justness and reasonableness of rates cannot be determined solely upon the basis of cost considerations.

Petitioners' cost evidence consists of comparisons of revenue to cost and contribution to overhead for shipments of wheat from various North Dakota origins to Seattle, Wash., Minneapolis and Duluth, Minn. Costs were developed by application of railroad annual report data through Rail Form A.[4] Although respondents dispute the accuracy of this cost study, the Administrative Law Judge concluded, and we agree, that petitioners' cost study followed generally acceptable procedures and reasonably reflects the costs associated with wheat transportation from the considered area.

Appendix C hereto contains petitioners' comparison of rates and costs for the movement of wheat between selected North Dakota origins, and Minneapolis and Seattle. Perusal of this appendix indicates that the compared rates range from 149 percent to 267 percent of variable cost for movements of wheat in boxcars and covered hoppers cars, respectively, between points in North Dakota and Minneapolis. These rates are also shown to range from 98 to 175 percent of fully allocated costs for similar movements. This evidence indicates a contribution to overhead ranging from a low of 10.99 cents to a high of 44.71 cents per 100 pounds for these movements to Minneapolis.

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[4] Statement No. 8-64, "Formula for Use in Determining Rail Freight Service Costs," prepared by the Commission's Bureau of Accounts.

The evidence contained in appendix C also shows that the inverse rates range from 138 percent to 229 percent of variable costs for movements of wheat in boxcars and covered hopper cars, respectively, between points in North Dakota and Seattle. These rates range from 98 percent to 147 percent of fully allocated costs and provide contribution to overhead ranging from a low of 25.64 cents to a high of 60.76 cents per 100 pounds on these movements to Seattle. It is also noteworthy that the lowest ratios of rates to variable and fully allocated costs, as well as the lowest contributions to overhead are reflected by those rates applicable for the longest movements to Seattle, i.e., from eastern North Dakota points, while the rates from western North Dakota points produce the highest ratios to costs and the greatest contributions to overhead.

Respondents correctly point out that the rates used in petitioners' cost study are not the existing wheat rates eastbound from North Dakota origins to Minneapolis. Subsequent to the submission of petitioners' evidence reduced grain rates were published from the entire origin area to Duluth-Superior and Minneapolis-St. Paul. Appendix D hereto illustrates these reduced rates from representative origins. These rates reflect approximately a 25-percent reduction from the prior eastbound rates and assertedly were established to meet unregulated motor carrier competition in the involved area. Obviously, petitioners' comparisons of revenue to cost and contributions to overhead predicated upon the previous rates from North Dakota origins to Minneapolis are no longer material. However, the proffered comparisons of rates to costs between points in North Dakota and Seattle are relevant, probative, and will be discussed further below.

Petitioners' costs analysis and comparisons establish that the inverse rate structure returns revenues substantially in excess of the respondents' fully allocated costs and that the contribution under these rates compares favorably with that of the previous eastbound rates. However, recognizing that rates which substantially exceed fully allocated costs do not necessarily exceed a maximum reasonable level, the Administrative Law Judge properly concluded that petitioners had not established that the inverse rates were unjust and unreasonable from a cost standpoint. See *General Motors Corp. v. New York Central R. Co.*, 311 I.C.C. 622, 625.

Despite the foregoing specific finding, the Administrative Law Judge concluded that the inverse rate structure was unjust and unreasonable because of changed conditions. Contrary to respondents' contention, this finding was not predicated upon an erroneous premise for the record establishes that there have been significant changes in the conditions attendant to the inverse rate structure and the export wheat trade. These changes include: elimination of the large surplus of hard red spring wheat; discontinuance of the Department of Agriculture subsidy program; reduction in export rates from some origins formerly subject to the inverse rate structure; application of a general rate increase to the westbound inverse rates without a similar increase on eastbound wheat rates; and a significant reduction in the eastbound wheat rates with no corresponding reduction in the westbound rate structure.

In addition to the previously described changed conditions in the wheat market, the following table more clearly details the disparate rate situation which prevails under the inverse rate structure. It shows the mileage from eight North Dakota origins to Seattle, and the rates applicable thereto at the Ex Parte No. 267-B level:

Origin	Mileage	Rate in cents per 100 pounds	
Fargo	1510.0	--------	[1]92.5
Grand Forks	1483.3	--------	[1]92.5
Jamestown	1444.8	--------	[1]92.5
Devils Lake	1394.6	[2]92.5	[3]96.0
Mandan	1367.0	[2]97.0	[3]100.0
Minot	1276.3	[2]100.0	[3]110.0
Belfield	1246.6	--------	[1]106.0
Williston	1156.2	--------	[1]103.0

[1]Nonseasonal. [2]Winter Rate. [3]Summer Rate.

This table shows that a shipper at Fargo, located 1,510 miles from Seattle has a rate of 92.5 cents per hundred pounds while a shipper at Belfield, located 1,246 miles from Seattle or about 265 miles closer than Fargo, pays a rate of 106 cents per hundred pounds. Since both shippers receive the same Minneapolis market price for their wheat less transportation charges to Seattle, the latter shipper is forced to pay a greater freight rate of 13.5 cents per hundred

pounds even though his distance is less to Seattle. Yet it is not disputed that there is no longer any relationship between the inverse rates and any other wheat rates from the considered area. In addition, it is admitted that any competitive element which existed and justified publication of the inverse rate structure is currently almost nonexistent.

Finally, we note that the relevant cost evidence presented in this proceeding establishes that the inverse rates are very remunerative to respondents, with the exception of the most distant points in eastern North Dakota. This evidence also shows that a rate of 92.5 cents at the Ex Parte No. 267-B level will not only exceed variable costs from points in western North Dakota currently subject to the inverse rate structure, but will provide significant contributions above fully allocated costs on movements of wheat from these origins to the north Pacific coast ports.

In our judgment, rates completely unrelated to the distance-cost of transportation service, i.e., the inverse rate structure, are generally an anomaly in the rate structure. See for example, *Patterson* v. *L. & N. Railroad*, 269 U.S. 1, 11 (1925) and *Fulton Bag & Cotton Mills* v. *N. Y. C. R. R. Co.*, 139 I.C.C. 225, 227 (1928). Such rates must be justified by special circumstances and conditions. As seen above, special conditions, such as the large surplus of wheat, the constant or flat subsidy program, application of the inverse rates over a wide origin area, and the relationship between these rates and eastbound/export rates, originally justified the inverse rate structure. However, in intervening years each of these special conditions has disappeared. In the circumstances, we conclude that continued application of the inverse rate structure on export wheat from origins in western Minnesota, eastern Montana, North Dakota, and South Dakota to the north Pacific coast ports is unjust and unreasonable. Furthermore, we affirm the Administrative Law Judge's finding that a rate of 92.5 cents per hundred pounds at the Ex Parte No. 267-B level from the considered origin area to north Pacific coast ports will be compensatory and with the addition of subsequently authorized general increases this rate will be just and reasonable.

Although we here prescribe a maximum rate on westbound export shipment of wheat, in view of our traditional reluctance to make such prescriptions, as well as the complexity of the issues presented, further comment is warranted. As we view it, the principal matter here at issue is the reasonableness of continued maintenance of higher freight rates from origins in western North Dakota than from origins in eastern North Dakota on shipments of export wheat moving to north Pacific coast ports. None of the parties in this proceeding has questioned the continuing need for a rate of 92.5 cents per hundred pounds at the Ex Parte No. 267-B level from eastern North Dakota origins in order to keep that area open for westbound export wheat shipments.

In order to obviate the possibility that the prescription we propose may be based on conditions which have changed since the closing of the record in this proceeding, we will not order the prescription into effect immediately, but will issue an order that respondents show cause why we should not order such a prescription. Responses should be filed 30 days from the service date of this report and replies 20 days thereafter.

Moreover, in order to prevent the possibility of the proposed prescription resulting in unreasonable rates at some future time, or seriously impeding the efforts of respondents and petitioners to meet changing conditions in commerce, the order proposed in this proceeding will be specifically limited in duration to a period of 1 year from its date of issuance. We believe that such a temporary order will afford necessary relief to petitioners, allow time for the parties to resolve their differences, and result in establishment of just and reasonable rates for the future.

Ultimate Findings and Conclusions

Upon consideration of the record in this proceeding, including the initial decision of the Administrative Law Judge, the exceptions of the respondents and the Bureau, and the replies thereto of petitioners, we find:

1. That there is no uniformity in port terminal charges at the different port ranges.

2. That there is no existing, established, recognized, or prescribed relationship of rates on export-import transcontinental traffic between the north Pacific coast ports, on the one hand, and the Atlantic or gulf coast ports, on the other hand.

3. That the rates applicable to export-import traffic between north Pacific coast ports and OCP territory have not been shown to be in violation of sections 1, 2, or 3 of the act.

4. That the existing export rates on wheat from origins in North Dakota to the north Pacific coast ports have not been shown to be

excessively and unreasonably high, in violation of section 1(5) of the act.

5. That, unless good cause be otherwise shown, the existing inverse rate structure on export wheat from origins in western Minnesota, eastern Montana, North Dakota, and northern South Dakota to the north Pacific coast ports is unjust and unreasonable to the extent these rates exceed a rate of 92.5 cents per hundred pounds at the Ex Parte No. 267-B level, plus subsequent authorized general increases.

6. That the above prescribed maximum rate will be compensatory and with the addition of subsequently authorized general increases will be just and reasonable.

CHAIRMAN STAFFORD, dissenting in part:

I cannot agree with the majority that the inverse rate structure on export wheat is unjust and unreasonable. I am, therefore, of the opinion that there is no need for the Commission to prescribe a rate for that traffic.

By adopting, in general, the findings of the Administrative Law Judge, the majority concedes that the present export rates on wheat from origins in North Dakota to the Northwest Pacific coast ports are not excessively high when considered from a cost of service standpoint. Certain changed circumstances are cited as the rationale for striking down the inverse rate structure. But it is not any clearer from the majority report than from the initial decision whether the changed circumstances are contended to have resulted in a violation of section 1(5) of the Interstate Commerce Act, relating to unjust and unreasonable rates, or of section 3(1) of the act, relating to preference and prejudice. The distinction is important for the reason that a reasonable maximum rate prescription under section 15(1) of the act will not lie unless the challenged rate is found to be unreasonable, discriminatory, prejudicial, or in violation of some other provision of part I of the act. Rates cannot be prescribed simply because circumstances have changed. Furthermore, I cannot even concede that the changed circumstances cited are relevant to the issues under consideration.

If the rates are not excessively high, cost of service considered, and a rate is not unreasonably high merely because it exceeds fully allocated costs, where is the violation of section 1(5) on the facts of this case? The initial decision appears to ground an objection to the inverse rates solely "when the effect upon the wheat grower in western North Dakota is compared with one located in the eastern part of the state." The objection then appears not to be that the rates are unreasonably high, but that they are prejudicial and preferential. But even passing over the ambiguity, the Commission was aware of the effects on the producers when it gave Fourth Section approval to the inverse rate structure. The issue in this case is whether the Commission's initial rationale for granting Fourth Section relief remains valid today.

The circumstance which prompted the Commission to approve the inverse rates in the first place was the Japanese demand for American hard red spring wheat *in adequate supply* and *at competitive prices with Canadian wheat*. There is no evidence in this record upon which a finding may be made that this justification for the inverse rate structure no longer obtains.

The record demonstrates that Canadian competition still exists on wheat exported to the Japanese market notwithstanding the current export demand. The verified statement of Lloyd J. Gilmore (exhibit 65-A) speaks to the continuation of this competitive situation.

The majority has rephrased certain findings of the Administrative Law Judge as follows:

> Yet it is not disputed that there is no longer any relationship between the inverse rates and any other wheat rates from the considered area. In addition, it is admitted that any competitive element which existed and justified publication of the inverse rate structure is almost nonexistent.

In so doing, the majority has perpetuated the Administrative Law Judge's misconception of testimony by Mr. Gilmore on cross-examination. Mr. Gilmore's testimony at transcript pages 1109-1110 did not relate to any change in the competitive situation existing between Canadian and American exporters of wheat. Rather, his testimony on those pages proceeded from a question seeking to show that there was no longer a direct relationship between published rates to the gulf and those to the north Pacific coast. The majority, consistent with this testimony, adopts the finding that there is no existing, established, recognized, or prescribed relationship of rates on export-import transacontinental traffic between the north Pacific ports, on the one hand, and, on the other, the Atlantic or gulf coast ports. And I concur with that finding. However, that finding has no relevance to the question whether Canadian competition still exists on wheat exported to the Japanese market.

The finding of the majority that the original justification for Fourth Section relief is no longer valid rests upon the "changed circumstances" cited. But none of the recited changes have altered competitive relationships between exporters, or between North Dakota elevator operators, or between North Dakota wheat growers, to the disadvantage of western shippers or growers. The price to the North Dakota farmer is still based on the Minneapolis market, less the freight rate to Minneapolis. Although the 25-percent reduction in the eastbound rates will provide the farmer a higher net price for his grain, this benefit will hold whether his grain is shipped east or west, and in satisfaction of either domestic or foreign needs.

The 25-percent reduction in eastbound rates, coupled with the increased net return to farmers selling their wheat at the Minneapolis price less freight to that market, has resulted in f.o.b. vessel prices at the Pacific north coast ports which are slightly less on shipments from elevators in eastern Montana and western North Dakota than on shipments from elevators in eastern North Dakota. But the prescribed rate parity envisioned by the majority will widen the f.o.b. vessel price disparity even more, thus giving exporters further incentive to buy wheat exclusively from the western elevators.

The presence or absence of a USDA subsidy on sales of wheat is not pertinent to the question whether the inverse rates are unreasonable, discriminatory, prejudicial, or otherwise unlawful. Withdrawal of the subsidy is important to the sale of wheat in the Japanese market only if it results in f.o.b. vessel prices at the Pacific north coast ports which are not competitive with the prices of Canadian wheat moving through Vancouver, British Columbia. The record indicates that such has not been the case. Moreover, since the subsidy was identical for the eastern and western North Dakota shipper, its elimination had the same effect upon both.

If the west coast market is to satisfy the Japanese demand, i.e., an adequate supply at prices competitive with Canadian wheat, it must pay a net price to eastern North Dakota shippers, which will approximate or exceed the net price to those shippers on the Minneapolis market. The principal of the inverse rate structure is designed to accomplish that end. The effect of a blanket rate is to preclude the eastern North Dakota shipper from participating in the west coast market. I cannot join in such a prescription.

VICE CHAIRMAN O'NEAL, dissenting in part:

I concur in the majority's report and order with respect to findings numbers 4, 5, and 6 and with the "show cause" order approach toward elimination of the inverse rate structure on export wheat.

However, I dissent from the report insofar as it rejects the sliding scale proposed by Administrative Law Judge Ries and also fails to propose any other remedy for the disproportionate impact of nationwide percentage rate increases on long-haul traffic.

Percentage increases impose a greater dollars and cents increase on long-haul traffic—that point is conceded both by the Administrative Law Judge and the majority report. However, the majority's report rejects the Administrative Law Judge's proposal to ameliorate the situation but proposes no alternative remedy. Instead, the majority's report says,

> Whether it is true or not, respondents' filing of horizontal percentage increases without holddowns and exceptions conveys the impression that little or no consideration has been given to the possibility of diversion and/or decrease in traffic as shippers become unable to compete in certain markets. As previously stated, carriers should study the anticipated effects on traffic, long-haul as well as short-haul, before filing percentage general increase proposals. Absent a clear indication that such economic-social impacts have been fully considered, and the increase proposal so tailored to avoid as many adverse effects as possible, this Commission will have to suspend and investigate such proposals in detail, and impose cents per hundredweight limitations and exceptions where necessary. Accordingly, we believe that initial resolution of this problem should be left to the carriers concerned, whose own best interests will be served by its fair and speedy disposition.

This admonition is fine as far as it goes, but in the present circumstances it does not go far enough. Experience has shown us that precatory utterances are lost on the railroads: they take the Commission seriously only when it gets down to specifics. Administrative Law Judge Ries' sliding scale is just such a specific: if the railroads don't like it, they may be moved to propose an alternative. If a majority of the Commission does not like it, alternatives are available, such as a cents per hundredweight increase, tapering percentages or a different sliding scale. With such an alternative approach in hand the Commission would not be subject to the criticism that it is acknowledging the adverse impact of percentage rate increases on long-haul rates without proposing any remedies. It should be kept in mind that Administrative Law Judge Ries' scale was simply a proposal for the railroads to consider in filing further increase proposals. Even so, it could be the first step toward rectifying the increasingly disproportionate burden of percentage increases on long-haul rates. It is disappointing to me and disillusioning to those who must rely on this agency for equitable treatment that the Commission declined to take even that first step toward correcting a problem which we all know exists and which will continue to exist until this agency acts.

COMMISSIONER HARDIN did not participate.

It is ordered, That the respondents, as they participate in the movement of wheat from stations on their lines in the States of Minnesota, Montana, North Dakota, and South Dakota, as set forth in the initial decision in this proceeding which is made a part hereof, to the north Pacific coast ports for export, be, and they are hereby, notified to show cause why they should not be required to amend the Trans-Continental Freight Bureau, West-Bound Export Commodity Tariff 29-O, I.C.C. 1805, Item, 2620 series, to reflect a rate not exceeding 92.5 cents per hundred pounds at the Ex Parte No. 267-B level, plus subsequently authorized general increases at the same minimum carload weight as presently shown in item 2620 series.

It is further ordered, That, unless respondents file a pleading responsive to the show cause order, that they be, and they are hereby notified and required to establish, on or before 35 days from the date of service of this report and order, upon not less than 10 days' notice to this Commission and the general public, by filing and posting in the manner prescribed by the Commission under section 6 of the Interstate Commerce Act, and thereafter to maintain and apply a rate of 92.5 cents per hundred pounds at the Ex Parte No. 267-B level, plus subsequently authorized general increases, on westbound export wheat shipments from the said origins to north Pacific coast ports, and that the terms and conditions of this order shall expire 1 year from the service date hereof.

FOUR-HUNDRED AND SEVENTY-SECOND SUPPLEMENTAL FOURTH SECTION ORDER NO. 17200

It is further ordered, That, unless stayed by a response to the above show cause order, Fourth Section Order No. 17200, entered April 21, 1952, in application No. 16500, et al., *Grain and Grain Products Within the Western District,* 284 I.C.C. 723, as modified and amended by supplemental orders entered therein from time to time, be and it is hereby further modified and amended by adding thereto the following paragraph:

> *It is further ordered,* That rail carriers parties to this proceeding be, and they are hereby, authorized to establish and maintain, over their direct routes, for the transportation of wheat, in carloads, from points in Minnesota, Montana, North Dakota and South Dakota, to north Pacific coast ports, to the extent considered in this

proceeding, an export rate of 92.5 cents per 100 pounds, at the Ex Parte No. 267-B level, plus subsequently authorized general increases, and to maintain higher rates from intermediate points; *Provided*, that rates from such higher rated intermediate points shall not be increased, except as may be authorized by this Commission, nor exceed the lowest combination of rates subject to the Interstate Commerce Act.

It is further ordered, That responses to the above show cause order be filed 30 days after the service date of this report and replies 20 days thereafter, and that if no responses are filed, the orders proposed above become of full force and effect 30 days after the service date of this report.

And it is further ordered, That a show cause order be, and it is hereby, entered.

APPENDIX A*

Description of petitioners and their contentions in Ex Parte No. 270 (Sub-No. 1A)

Northwest Marine Terminal Association, Inc., is a voluntary association of deepwater ports and terminals located in the States of Oregon and Washington.[1] It was this association's petition that was instrumental in urging the Commission to institute the investigation in Ex Parte No. 270 (Sub-No. 1). It alleges that recent railroad rate increases on a percentage basis has distorted previous relationships between the transcontinental rate applied to export-import traffic moving through Pacific Coast ports and the rates provided to and from competitive ports; that an unjust and unreasonable rate application resulted from these increases; that sections 1, 2, and 3 of the Act were violated; and that outstanding Commission orders are being ignored by the rail carriers.

Basic to its allegations is its reliance upon the Commission's language regarding export-import rates in *Increased Freight Rates, 1970 and 1971*, 339 I.C.C. 125. There the Commission found at page 188 as follows:

> (4) All existing port relationships duly established by order of the Commission or recognized customs of the trade shall be maintained and preserved. Any disruption in

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*The summary of the evidence in this appendix is excerpted from the Administrative Law Judge's initial decision. A minor change has been made, however, in the first paragraph of the section entitled *Rate History-Transcontinental* in order to correctly state the Commission's findings in Docket No. 28310. Reference to appendices have also been changed in several instances to coincide with the appendices to this report.

[1] Its membership list consists of the following ports: Anacortes, Wash.; Astoria, Oreg.; Bellingham, Wash.; Everett, Wash.; Grays Harbor, Wash.; Olympia, Wash.; Port Angeles, Wash.; Portland, Oreg.; Seattle, Wash.; Tacoma, Wash.; Vancouver, Wash.; and the Salmon Terminals Division Olympic Steamship Co., Inc. of Seattle, Wash.

such relationships arising out of the publication of tariffs pursuant to authority herein granted shall be promptly corrected.

In the orders that accompanied the report, the Commission provided as follows:

> *It is further ordered,* That in making effective any increase in rates and charges herein authorized, the respondents be and they are hereby, required to protect and retain all existing port relationships and to apply any such increases on export or import traffic subject to the limitations provided in this report.

The association's witness interprets the Commission language to mean "all existing port relationships or recognized customs of the trade shall be maintained and preserved." When reference is made to port relationships the witness means competitive relationships and he believes the proper relationship of export-import freight rates is the level of rates which prevailed after the Ex Parte No. 256 general increase that became effective June 16, 1968. The reason for selecting that date was because the relationships remained stable for an extended period of time. During that period the transcontinental rail carriers voluntarily published a vast number of rates on many commodities which were structured to provide the carriers the opportunity of moving their traffic to west coast ports. Such rates were maintained for a period of time long enough for the trade and commerce to rely upon them afterwhich they were disrupted, in the opinion of the west coast ports, by the subsequent general increases authorized on a percentage basis without preserving and maintaining the prior relationships. The association does not assail the level of the rates nor does it propose prescribed rates. It recognizes the necessity of the rail carriers to have a free hand in establishing rates in order to remain competitive in moving the traffic. The witness asserts that there are many reasons why a shipper located east of Nebraska, for example, would elect the use of west coast ports despite a disparity in the rail rate such as less time in transit, service considerations and inventory costs. It is suggested that the Commission should designate a date and what ever differential was in effect between the export-import rates through the Gulf ports and the rates through Seattle should be restored and maintained. Moreover, the Commission is requested to find that a rate relationship did exist on export-import traffic between the west coast ports and other port ranges, that the relationship has been unduly disturbed and that the relationship should be preserved from the distortions caused by across the board percentage general increases.

On brief the Northwest Marine Terminal Association, Inc., which was concurred in by the Washington Utilities and Transportation Commission, and the Puget Sound Traffic Association requests the following findings:

> 1. That rate relationships exist between Pacific Coast ports, on the one hand, and Atlantic and/or Gulf ports, on the other hand, which were developed voluntarily by Trans-Continental rail carriers as a custom of the trade.
> 2. That the Pacific coast ports have experienced traffic loss and will continue to lose traffic by diversion to Gulf and/or Atlantic ports because of percentage general rail rate increases (Ex Parte Nos. 262, 265, 276, and 281) which have caused substantial and progressive disruption and distortion in existing port relationships.
> 3. That Trans-Continental export/import rail rates applied to movements via Pacific Coast ports are unjust and unreasonable in violation of sections 1, 2, and 3 of the Interstate Commerce Act, because the carriers did not comply with the Commission's

orders in Ex Parte Nos. 262, 265, 267 and 281 (in connection with carload traffic) relative to preservation of existing port relationships.

4. That the Trans-Continental rail carriers have not corrected the disruptions in such export/import rate relationships arising from the publication of those increase tariffs, and these carriers shall be required to apply a maximum of two (2) cents per hundred weight per percentage point of increase from (and including) Tariff of Increase Rates and Charges Ex Parte No. 262 forward, except in those instances where a lesser cents per hundred weight amount of increase is currently in effect, such lesser increase shall continue to apply.

5. That to prevent distortion or disruption of port relationships arising from future percentage general increases, the same two (2) cents per hundred weight per percentage point of increase formulas be observed as a maximum amount of increase on export/import traffic moving via west coast ports, except in those instances the Eastern and/or Southern carriers elect to forego any increase on export/import traffic, the Western carriers are prohibited from establishing increases on export/import traffic.

EVIDENCE SUBMITTED IN BEHALF OF THE NORTHWEST PACIFIC COAST PORTS

The Washington Utilities and Transportation Commission is a legally constituted agency of the State of Washington. Its interest stems from a statutory obligation to protect the economic interests of the State and of its citizens. Its position in this proceeding is that the application of across the board percentage increases to all export and import traffic can only work to the detriment of the West Coast ports generally, and specifically to the detriment of the economy of the State of Washington. It argues that a definite relationship exists between the various port districts and whether it was prescribed, developed as a custom of the trade, or by carrier action, such relationship does exist and should be maintained.

The State of Washington with its many deep-water harbors, both river and inland waterways, with direct access to the sea, has a primary interest on the economic impact of off-shore maritime commerce as it effects the state. Seattle is the primary port in Washington.

It is contended that Seattle's hinterland is not restricted to the Pacific Northwest. It is nationwide, particularly in the case of imports from the Pacific Rim Countries. Cargoes flowing through the Seattle port are most intensive in the Midwest and Northeast as shown below:

Imports through Seattle—1969

Region	Percent
Northeast (New York, Pennsylvania, other Northeastern States)	15.3
Southeast	3.8
Midwest	49.9
South (Texas and other Southern States)	7.4
Southwest (California, Colorado and other Southwestern States)	11.0
Northwest (Eastern Washington, Oregon, Alaska, and other Northwestern States).	12.6
Total	100.0

Of prime interest to the Pacific Coast ports is the export-import traffic moving to and from the area designated OCP (overland common point) territory comprising numerous origin and destination points in the area east of and including North Dakota, South Dakota, Nebraska, Colorado and New Mexico. Cargoes flowing between OCP territory and trans-Pacific countries through West Coast ports have traditionally enjoyed certain privileges such as partial absorption of customary port-handling charges by inland carriers. These privileges were established by the railroads in the early 1920's, principally to stimulate eastbound transcontinental traffic. During the five years, 1965-1969, the flow of eastbound OCP cargoes through Seattle have increased from 20,000 to over 200,000 short tons. In 1970 the outbound tonnage by dry cargo and tanker service for all Washington ports totalled over 16 million short tons.[2] The corresponding inbound tonnage was over 7 million short tons.

PORT OF SEATTLE, WASHINGTON

The Port of Seattle is a municipal corporation created through enabling legislation by consent of the voters within the Port district on September 5, 1911. Its activities are administered by a five member Port Commission. The Port is located on Puget Sound and it is the closest major continental United States port to the Orient. It is served by the Burlington Northern, the Milwaukee Road and the Union Pacific railroads and numerous motor carriers. In 1964 Seattle was in sixth place among the West Coast ports with respect to imports destined to OCP territory. By 1968 its volume of imports increased that standing to second place. Storage facilities, distribution and consolidation of freight was considered to be the most important factors in the substantial increase in tonnage and number of shipments in 1968. New rates on freight-all-kinds published by the railroads and trucking companies made possible new consolidations into OCP territory.

The annual reports of the Port of Seattle for the years 1965 through 1971, show a real aggressiveness in every phase of the port's activities, including the expenditure of large sums of money, and by 1971 its superiority over competing ports on OCP territory traffic was even more pronounced. By 1971, when Seattle took over first place in OCP tonnage among the West Coast ports, its share of imports was 43 percent; Los Angeles had 32 percent; San Francisco 17 percent; and Columbia River ports had eight percent.

During the first half of 1971, Seattle maintained its dominance among West Coast ports by registering a 35.3 percent increase over the same period in 1970. The gain was from 300,000 to 406,000 revenue tons. The growth occurred in imports from Japan, Korea, and Taiwan. According to the 1971 annual report of Seattle, due to the large number of new accounts the Port's OCP warehouse facilities operated at full capacity most of the year despite a 100 day longshoreman's strike on the West Coast. In order to alleviate the problem of space, crews were put on day and night shifts to keep the cargo moving.

Export-import tonnage handled through the Port of Seattle for the years 1965 through 1970 is shown below. A comparison of export-import tonnage with total tonnage handled at the port, including foreign and domestic, is also shown for each of those years:

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[2] The Washington Ports considered were as follows: Longview, Kalama, Vancouver, Willapa River and Harbor, Grays Harbor, Neah Bay, Port Angeles, Port Townsend, Port Gamble, Hamnersly Inlet, Olympia, Tacoma, Seattle, Everett, Anacortes, and Bellingham.

	Import	Export	Total Imp./Exp.	Total tonnage
		(short tons)		
1965	1,304,909	1,229,650	2,534,559	14,747,754
1966	1,439,317	1,364,912	2,804,229	14,846,806
1967	1,625,647	1,484,861	3,110,508	14,209,270
1968	2,392,356	1,357,175	3,749,531	16,035,706
1969	2,436,531	1,460,442	3,896,973	18,353,074
1970	2,262,872	1,706,158	3,969,030	15,247,524

After a modest beginning in 1965, through intensive planning and promotion, Seattle's OCP export-import traffic has shown a remarkable growth during the five years that followed.

Excluding water-borne traffic to and from Western Canada (British Columbia) 2,258,000 short tons moved through the Seattle port in 1969 valued at $644,550,000. Broken down percentagewise, 22.6 percent of the cargoes moved to Japan, 18.4 percent to Asia (excluding Japan) and 5.5 percent to Europe.

An exhibit of record shows the projected off-shore tonnage that is expected to be handled through the Port of Seattle as follows (in short tons):

Year	*Tonnage*
1975	8,840,000
1980	11,850,000
1990	20,520,000
2000	32,330,000

During the period 1965-1970 the Port of Seattle enjoyed a steady increase in operating revenues. In 1965 its operating revenues were $7.3 million. For the years 1966 through 1968 the operating revenue levels increased to $8.7, $11.5, and $12.6 million, respectively. Revenues for 1969 amounted to $16.1 million and in 1970 the port realized $20.4 million. By 1971 the revenues reached $23.7 million.

Increased budgets paralleled the rise in foreign tonnage and operating revenues. The 1966 budget, approved in 1965, called for expenditures of $19.9 million. A budget of $22.6 million was approved for 1967. Expenditures of $36.4 million were budgeted for 1968 and in 1969 the budget soared to $83.1 million. A budget of $94.1 million was approved for 1970 and in September 1970 the port approved a budget of $117.5 million for 1971. The 1972 budget was reduced to $85.6 million.

The Port's net profit in 1971 was $79,004 exceeded that for 1970 by more than $10,000 despite an increase of $1,024,450 in depreciation expense. During the latter part of 1971, Seattle acting in concert with other Northwest Pacific ports increased wharfage charges by 25 percent effective March 15, 1972, and applied a 20.5 percent surcharge to all terminal charges relating to labor items to defray anticipated increases in labor costs related to new contracts with the labor union.

The Port of Seattle retains sales representatives in New York, Chicago, Spokane, Wash., Tokyo, Japan, and Washington, D. C. The New York representative appeared as a witness.

In contrast to the increased import traffic through Seattle to OCP territory as shown in the annual reports, this witness (the New York representative) contends that beginning in 1966 or 1967 it became more difficult to get new customers due to the percentage increases in railroad rates. He stated that this additional cost caused shippers to look for less expensive ways of moving their traffic. Although no particular study was made, the witness estimated that Seattle lost in excess of 100,000 tons of cargo in 1971 due to the percentage increases. The following examples are shown of traffic lost allegedly due to increased rail rates on a percentage basis:

Commodity imported	Weight in pounds handled in 1970	Weight in pounds handled in 1971
Electronics	231,316	0
Toys	724,660	0
Do	792,624	0
Recreational equipment	1,098,918	0

The electronic cargo was destined to the Massachusetts-New Jersey area in 1970 and the other cargo shown went to New York. In 1971 these foreign shipments were imported through Boston and New York rather than Seattle.

According to statistics compiled by the U. S. Department of Commerce, the total imports during 1970 from the Pacific Rim Countries to all United States ports amounted to 23,486,384 short tons. By comparison, the OCP traffic of 406,000 revenue tons moving through Seattle from those countries during the first half of 1970 is considered by the witness to be minuscule. However, admittedly OCP traffic through the Port of Seattle is greater now than ever before. The reason for such increased traffic, the witness explains, was due to many factors in addition to the rail rates. Each importer, depending upon the commodity, has a pattern of distribution and marketing plus many other factors that decide which port to use. While the North-South line which can be reached to and from the Port of Seattle has always varied depending upon the commodity, the witness contends that the line has moved westward everytime a percentage increase in the rail rates was made effective.

During the past decade the Port of Seattle has developed into one of the most modern ports in the world. It also owns and operates the Seattle-Tacoma International Airport.

PORT OF TACOMA, WASHINGTON

This port was established in November 1918, by a vote of the people of Pierce County. It is located on Puget Sound just a few miles south of the Port of Seattle. Four railroads serve the port, namely, the Southern Pacific, the Union Pacific, the Milwaukee, and the Burlington Northern plus over 50 major trucking lines. The port operates its own dockside to mainline switching railroad. The Tacoma Municipal Railroad furnishes service for all railroads throughout the port area, with free switching on line-haul traffic. The port owns about 3,600 acres of industrial land which is ideally suited for import-export activities. It is a terminal port with 25 deep water berths for conference vessels to dock. In 1970 it conducted import-export trade with over 70 countries amounting to over 5 million short tons worth in excess of 400 million dollars. The primary market is the Pacific Northwest which includes Alaska, British Columbia, Washington, Montana, Idaho and Oregon. The midwest and southwest constitutes the secondary market. One of the most unique facilities that the Port of Tacoma offers is a dockside cold storage warehouse for handling frozen and perishable commodities. Commodities that are imported in the most significant volume includes general cargo, lumber, logs and tiles, grain in bulk, alumina ores and other bulk commodities, and crude rubber. A very small amount of this import traffic moves to OCP territory except crude rubber which moves in large volume and is increasing. This increased crude rubber tonnage is asserted to be due to independent action by one rail carrier that published a lower rate with a higher minimum weight which kept Tacoma competitive in OCP territory. Tacoma has special facilities for handling crude rubber and has actively solicited its movements. The principal commodities exported are pulp and paper, copper, alumina, logs and tallow. Except for isolated shipments, none of the commodities for export originate in OCP territory.

An example wherein it is contended that rail rate increases on a percentage basis has destroyed established relationships between port ranges concerns automobile traffic from Japan. In June 1971 Tacoma was used as a trial center for the import of Toyota autos from Japan destined to Midwest markets. The test period was successful but to continue on a permanent basis it was found that to reach the largest market of all—Chicago—Tacoma was not competitive. The following table depicts the increasing disparity based on costs per tri-level rail car (18 autos to a car):

Year	Cost from Tacoma	Cost from New Orleans	Difference	Difference increase
1967	$1,857.09	$783.83	$1,073.26	$31.26
1968	1,949.94	823.02	1,126.92	84.92
1969	2,066.94	872.38	1,194.56	152.56
1970	2,190.96	924.74	1,266.22	224.22
1971	2,453.88	1,035.69	1,418.19	376.19
1972	2,515.23	1,061.58	1,453.65	411.65

Due to lower water rates of about $45 per automobile in 1967 to the west coast and savings of interest in inventories due to shorter transit time, Tacoma was competitive. However, beginning with Ex Parte increase No. 262 on a percentage basis and continuing through the Ex Parte No. 281 increase, it is contended that the disparity in rates were too great to attract the traffic through Tacoma.

Export-import tonnage moving through the Port of Tacoma for the years 1965-1970 is shown below as well as total tonnage handled for each of those years.

	Import	Export	Total imp./exp.	Total tonnage
1965	1,375,705	1,349,143	2,724,848	6,132,431
1966	1,457,974	1,531,117	2,989,091	5,827,876
1967	1,520,252	1,987,786	3,508,038	6,517,281
1968	1,902,859	2,267,570	4,170,429	7,459,532
1969	1,913,452	2,216,625	4,130,077	7,882,197
1970	2,217,961	2,826,983	5,044,944	8,602,828

The Port of Tacoma employs a traffic solicitor in Chicago, two solicitors working the Pacific Northwest area, and the witness, as sales manager, handles the port's relationship with ocean carriers as well as soliciting traffic in the Ohio area and the Gulf. It is contended that recent general increases granted the rail carriers based on percentage as the measure of the increase have destroyed the cost relationship which governed transcontinental traffic through the port. Prior to Ex Parte No. 262 increase, it is claimed that the rate differentials permitted a maintenance of traffic flow into OCP territory. As an example, greasey wool traffic was obtained from Australia and New Zealand because frozen meat from those countries was being imported through Tacoma. For the most part the wool moved to the Boston area with some going to Faribault, Minn., Cleveland, Ohio, and Greensboro, South Carolina. In 1967 the wool tonnage was 391 tons; 1968, 1,531 tons; 1969, 5,337 tons; 1970, 2,961 tons; and 1971, 373 tons. The major portion of the wool imported through Tacoma was during the three years 1968, 1969, and 1970 after which it declined in 1971. By 1972 the movement ceased almost entirely despite a reduced rail rate with increased carload minimums from 60,000 pounds to 80,000 and 100,000 pounds effective October 7, 1971. The reason given for this loss of traffic is the disparity in transportation costs of water-rail through Tacoma to Boston and the Port of Boston to destination. Although the ocean rates to Tacoma remained the same throughout those years, the percentage increases granted the rail carriers caused a rate disparity of two cents favoring the East Coast in 1968 to increase to 63 cents per 100 pounds in 1971. In addition, the witness contends that wool could not be loaded in quantities of 80,000 or 100,000 pounds in a 50-foot rail car because not all Australian and New Zealand dock facilities are equipped for high density compression. Nor were consignees willing to receive high density dumped wool which results in discoloration and splitting of fibers. On the other hand, frozen meat traffic from New Zealand through Tacoma is increasing. It moves to the local area of Washington and Oregon.

PORT OF PORTLAND, OREGON

The Port of Portland is located on the Columbia River about 85 miles inland from the Pacific Ocean. It is served by the Burlington Northern, the Milwaukee Road, Southern Pacific and Union Pacific railroads. The principal commodities imported through Portland are limestone, alumina, crude salt, iron and steel products, automobiles and parts, and wood pulp. The principal exports are wheat, barley, lumber, logs, scrap metal, and flour. None of those commodities move in significant amounts to or from OCP territory. Traffic to or from OCP territory is rather new to Portland. Traditionally its traffic has been considered local traffic. Automobiles from Japan that come through Portland go into the local market.

Import-export tonnage moving through the Port of Portland is shown below for the years 1965-1970, inclusive. Total foreign and domestic tonnage is also shown.

Year	Import	Export	Total import-export	Total tonnage
1965	1,368,259	3,727,606	5,095,865	11,476,341
1966	1,408,975	3,826,182	5,235,157	11,416,503
1967	1,413,202	4,432,641	5,845,843	13,305,567
1968	1,549,576	3,893,962	5,443,538	13,349,948
1969	1,740,932	3,739,435	5,480,367	10,560,856
1970	1,682,411	4,026,614	5,709,025	10,572,484

Portland employs sales representatives with one located in New York, two in Chicago, and one in Japan. In more recent years Portland has handled some commodities to and from OCP territory. The imports consist of television sets, radios, hi-fi's, chinaware and flatware, motorcycles and miscellaneous items called department store merchandise. An exhibit of record shows OCP shipments—in pounds—from Portland to the destination state by rail, truck, freight forwarder and air for December 1971 and the months of January, February, and March, 1972 as follows:

	December 1971	January 1972	February 1972	March 1972
Rail	1,167,959	1,106,845	365,911	252,705
Truck	529,484	758,560	344,662	3,991,022
Freight forwarder		27,496		
Air		5,732	1,200	
	1,697,443	1,898,633	711,823	4,243,727

The destination states for this cargo were for the most part Illinois, Maryland, Michigan, Nebraska, New York, and Ohio.

OCP commodities for export during the period 1964 through 1971 have been very small consisting of some machinery and flour. While no detailed study has been made with respect to the amounts of export or import OCP tonnage which Portland might have lost during the period 1964 through 1971, the sales representatives in Chicago and New York have indicated their inability to sell the Port of Portland on certain OCP movements, especially electronics. The reason, it is contended, is because the transportation costs from Portland to the OCP destinations are higher than the comparable costs from Atlantic coast ports. The witness maintains that Portland is not only in a disadvantageous competitive position on OCP traffic with the Atlantic coast range due to percentage increases in rail rates, but it is in competition with the Port of Seattle. Of the Pacific coast ports, Seattle is the leader in OCP traffic and Portland participates the least of all.

A witness on behalf of the Public Utility Commissioner of Oregon testified as to the economic impact upon the Oregon customs district which includes the ports of Astoria, Newport, Coos Bay, and Portland in the State of Oregon; and, Longview, Vancouver, and Klama in the State of Washington. This witness supports the position of the Northwest Marine Terminal Association to the effect that rail export-import rates between OCP territory and the Pacific Northwest ports should be adjusted in order to restore rate relationships with Gulf ports which have been altered by the general increases in freight rates since 1966. In his opinion adjustments are necessary to maintain a free flow of foreign commerce through the Pacific Northwest ports on trans-Pacific commerce.

PORT OF VANCOUVER, WASHINGTON

The Port of Vancouver is located on the Columbia River across from Portland, Oregon. It is 50 miles south of Longview, Wash., and 85 miles from the Pacific Ocean. It is served by three railroads, the Burlington Northern, Inc., the Chicago, Milwaukee, St. Paul & Pacific Railroad Company, and the Union Pacific Railroad Company. About 95 percent of the port traffic is handled by rail. The port is a terminal operator and all piers and facilities are owned and operated by the port. It has storage and refrigeration facilities which are subject to tariffs filed with the Federal Maritime Commission as are all the other port charges. There are 32 tenants on the port property. The port built two prefinishing plants in 1966 for processing plywood and other wood products which are leased to an Oregon corporation. About 70 percent of Vancouver's inbound tonnage is wood products of which 40 percent is plywood imported from the Philippines, Taiwan or Korea. The raw plywood is prefinished at the port prior to transcontinental movement. The total number of transcontinental carloads of prefinished paneling moving from Vancouver since the two plants started production in 1966 were as follows:

	Carloads
1966	646
1967	639
1968	702
1969	793
1970	578
1971	122
1972 (thru May)	120

About 50 percent of the above traffic moved to the Indiana area and the balance moved to St. Louis, Chicago, Lincoln, Nebr., and Iowa points. All of this traffic moved on domestic rail rates.

Plywood which is shipped out of Vancouver consists of two types. One type is Douglas Fir plywood having a local origin and the other is plywood imported from the Philippines, Taiwan or Korea. While both types of plywood, after being prefinished, move on domestic rates to OCP territory, the imported plywood carries a higher charge because a 17 cent per hundred weight waterborne charge is added at the Ex Parte No. 267-B level.

During 1971, Vancouver imported 120,000 tons of plywood which represented its best year but it all moved to local territory. The witness attributes the drop in the 1970 and 1971 plywood tonnage figures to the percentage increases authorized in the rail rates. Prior to the Ex Parte No. 265 general increase, it is asserted that Vancouver was competitive in the consuming area of Illinois, Indiana and Michigan despite the shorter distance from that area to the East coast and the Gulf. It is contended that plywood from the Far East can now be shipped more cheaply through the Port of Norfolk, Virginia, thence by rail to Lincoln, Nebr. than through the Port of Vancouver. Exhibit A-67, attachment, p. 1 offered by another witness of the Petitioners refutes that contention. According to that exhibit the total ocean-rail charges on an 80,000 pound carload of plywood at the Ex Parte No. 281-B level imported from the Philippines via Vancouver to Lincoln, Nebraska amounts to $3030.23 compared to the total ocean-rail charges via Norfolk, Va. to Lincoln of $3156.82.

In addition to plywood, the principal commodities imported through the Port of Vancouver are wood products, veneer, core stock, steel, tapioca flour, and general commodities. The principal commodities exported through the port are grain, flour, lumber products, and paper products. All commodities for export, except an occasional shipment of machinery from the midwest, originate in territory local to Vancouver.

Foreign tonnage moving through the Port of Vancouver for the year 1965-1971 is shown below. Total foreign and domestic tonnage is also shown for each of those years, except for 1971 which is not available.

Year	Import	Export	Total import-export	Total tonnage
1965	85,644	660,100	745,745	1,657,135
1966	303,156	838,387	1,141,544	1,825,588
1967	405,781	788,068	1,193,849	2,179,734
1968	508,794	592,125	1,100,919	2,985,376
1969	715,445	846,724	1,562,169	2,326,674
1970	707,200	1,178,364	1,884,564	2,605,867
1971	821,484	886,024	1,707,508	not available

The net operating revenue for the port shows an increase from $286,069 in 1968 to $467,013 in 1971. On cross-examination the witness agreed that except for the 100 day strike on the West Coast, both the 1971 import-export tonnage and revenue would have been greater. The record shows construction of additional warehouses was in progress in 1971 at a cost of $854,276, primarily to handled imported general cargo.

The Port's witness states that a consignee is interested in what the laid-down transportation costs of importing his particular commodity will be. Those costs are said to include ocean rates, port terminal charges and rail rates. Although fluctuations occur in the ocean rates and terminal charges over which the rail carriers have no control, the increased rates of conference line vessels have maintained a fixed differential. Fifty percent of Vancouver's import traffic moves in conference line vessels and the balance by contract vessels. As to the terminal charges, the ocean carriers and the transcontinental rail carriers have an absorption agreement whereby the terminal charges of all West coast ports are absorbed. Under the agreement the railroads absorb 60 percent of the carloading or unloading charge and the steamship company absorbs the other 40 percent plus the handling and wharfage charges. The component factors that make up the port terminal charge are wharfage, handling and carloading or unloading. Dockage and service charges are assessed against the vessel. The dockage charge is based on the overall length of the vessel. The average vessel calling at Vancouver is in the 500 foot class and the charge is about $200 per 24 hour period. While service charges and terminal charges vary at different ports and as to various commodities, the witness gave some examples of the charges at Vancouver. The service charge on plywood is $2.07 per ton and it is the same for freight-all-kinds. The wharfage charge on plywood is $1.10 per ton and on general cargo it is $1.25 per ton. A handling charge on imported plywood of $2.35 per 40 cubic feet or 2,000 pounds, whichever creates the greater revenue, is assessed against the cargo by the water carrier. Vancouver makes a handling charge of $4.18 per ton on plywood and on iron and steel and freight-all-kinds the charge is $3.79 per ton. The water carrier pays the difference between the $2.35 and the port handling charge of $4.18 or $3.79 as the case may be. The carloading charge on plywood is $5.32 per ton and for freight-all kinds $4.07 per ton. In 1966 the wharfage charge on plywood was 70 cents per ton. Substantial increases in the other components of the port terminal charges have occurred since 1966 due to increases in pay of the longshoremen.

The witness blames the decline of imported plywood through the port of Vancouver on the percentage increases granted the rail carriers. While recognizing the necessity for increased rail rates due to rising costs, it is argued that the dollar spread should remain the same.

PORT OF LONGVIEW, WASHINGTON

This port was established in 1920 for local industry. It is located on the North bank of the Columbia River, 66 miles upstream from the Pacific Ocean and 45 miles downstream from Portland, Oregon. Total land area at the Port amounts to 132 acres currently being utilized or developed, including 7 berths, 12 storage sheds and 5 industries which lease space on port property. There are 266 acres of undeveloped land with 4,000 feet of waterfront available for future expansion at a site 8 miles downstream. Water depth alongside the berths is kept at a nominal 35 feet, the same depth as the Columbia River channel. The facilities of the Port are owned, operated and supported by the Port District of Longview. The port is a municipal corporation governed by an elected board of three non-salaried Commissioners who establish policy and direct port activities which are administered by a port Manager and his staff. Numerous steamship lines provide ocean carrier service to and from the port. All berth lines serving the Pacific North Coast discharge at Longview. Several of the lines offer direct service from Japan on an average schedule of 12 days. Longview is also served by vessels sailing to Central and South America, Europe, Scandinavia, the Middle East, Southeast Asia, and Australia. Three transcontinental railroads serve the port, namely, the Chicago, Milwaukee, St. Paul & Pacific Railroad Company, the Burlington Northern, Inc., and the Union Pacific Railroad Company. All three lines connect jointly with the port terminal through a switching carrier, The Longview, Portland & Northern Railway Company. At least 16 motor common carriers offer service for both local and long haul traffic to and from the port. Nine freight forwarders also serve the port. Longview's annual financial reports for the years 1965 through 1971 of record shows total revenues, total expenses, and percent of expenses to revenues as follows:

Year	Total revenue	Total expenses	Percent expenses to revenue
1965	$3,490,684	$2,867,088	82
1966	4,237,513	3,377,929	80
1967	4,209,658	3,464,664	82
1968	5,023,786	4,147,331	82.5
1969	5,796,973	5,101,664	88
1970	5,380,661	4,734,985	88
1971	4,798,140	4,184,016	87

Generally, the revenues increased from 1965 to 1969 with a decline for the years 1970 and 1971. The expenses appear to reflect a similar trend as the revenues.

Foreign tonnage handled through the Port of Longview is shown below for the years 1965-1971. Total foreign and domestic tonnage is also shown for each of those years.

Year	Import	Export	Import-export	Total tonnage
1965	153,996	1,545,463	1,699,459	4,161,251
1966	194,906	1,782,624	1,977,531	3,683,423
1967	127,660	2,252,918	2,380,578	4,376,600
1968	227,207	2,801,690	3,028,897	4,935,504
1969	306,353	3,273,253	3,579,606	5,387,555
1970	451,821	3,107,124	3,558,945	5,884,082
1971	316,673	2,039,851	2,356,524	(not available)

Longview became a terminal port in 1951 which meant that all ocean-going vessels of the Trans-Pacific Freight Conference would call at the port on a regular basis. It made Longview competitive with other terminal ports. Upon becoming a terminal port in 1951, all import traffic was destined to OCP territory. At the present time about 85 percent of the ports non-bulk imports move to OCP territory. The principal commodities now being imported consists of general cargo, plywood, corestock, veneer, earthenware, novelties, toys, christmas decorations, typewriters, and canned goods. With respect to canned goods, 15.8 million pounds were imported through Longview in 1965 destined to OCP territory. In 1970 there was an increase to 49.9 million pounds. In 1971, because of the 100 day longshoremen strike on the West Coast, the import of this commodity through the Port decreased to 38.9 million pounds. However, the volume has now returned to the 1970 level. On traffic exported through Longview, about 10 percent originates from OCP territory. It is characterized by the witness as unstable traffic requiring solicitation.

Longview has traffic representatives in New York and Chicago. In New York, an established firm is employed for that purpose but in Chicago an individual employee solicits traffic for the Port. It is contended that the solicitation of traffic has become more difficult due to the increased rail rates. The witness claims that any coastal range should have the opportunity to be competitive at any point in the United States. Since the mileage is greater from the Pacific Coast ranges to the primary market area (OCP territory) than from the Gulf or Eastern coastal ranges, this of itself creates higher freight rates to and from the Pacific Coast. It is argued that to permit percentage increases in rail rates causes the rate disparity to become greater with the result that the competitive area has been moved westward to roughly a north-south line from Chicago to St. Louis, which is beyond the primary consuming or producing markets.

The following table shows the number of carloads of plywood imported through the Port of Longview for the years 1969 through August of 1972.

Year	*Carloads*
1969	1,439
1970	767
1971	584
1972 (thru August)	239

As shown above and also with respect to the Port of Vancouver, imported plywood moving to OCP territory has been declining since 1969. In fact, imported plywood through the Port of Longview to OCP territory had a fairly consistent decline from 1960 to 1966 prior to the ex parte increases complained of, while the Port of Vancouver imported 120,000 tons during 1971, which was its best year, all of which moved to local territory.

A plywood prefinishing plant was first established in the Longview area in 1951 and in 1966 a second plant was erected. During that same period of time, there were several new prefinishing plants established in the Southern or Eastern part of the United States. The United States Plywood Company established new plants at Galveston, Texas; Charleston, South Carolina; Norfolk, Virginia; and in New Jersey. Evans Products Company established a plant at Chesapeake, Virginia, a suburb of Norfolk. Plywood Panels, Inc. erected a plant at New Orleans. The Vancouver Plywood Company built a plant at Charlotte, North Carolina and plants were established at Norfolk, Va. and Galveston, Tex. by the Van-Port Panel Company.

Simpson Industries established a door manufacturing plant at Varnville, South Carolina, which utilizes import plywood.

In 1966, when two prefinishing plants were built on the Port of Vancouver property, one of the companies also built a plant at Norfolk, Va. The plan was for the Norfolk plant to take care of the Eastern market and the Vancouver plant to supply the requirements of Chicago, Indiana and West. At present, Vancouver is supplying Denver and West.

In 1962, the Commission found proposed railroad schedules lawful, permitting storage or processing of imported lumber and plywood, due to the lack of facilities at the ports of Los Angeles and Long Beach, Calif., to be accomplished at places other than in the immediate area of each port as in the past, and according the same absorption privileges as though stored or processed at the port. See *Absorption—Lumber & Plywood—Pac. Coast Interior Orig.*, 316 I.C.C. 15. The outcome of that proceeding admittedly had the effect of diminishing the movement of plywood through Longview because it allowed other west coast ports that were short on space to go outside their port property to establish storage and processing facilities, thereby enchancing their competitive ability. In prior years, Longview boasted in having an advantage over other ports due to their spacious port property.

Due to more intense competition from other Pacific Coast ports and the building of new prefinishing plants at the Atlantic and Gulf Coasts, the rail respondents suggest these are the reasons that account for the decline of plywood being imported through the Ports of Vancouver and Longview, rather than the rail rate increases. It is also pointed out that the plywood moves on domestic rates and whatever might be done with respect to rates on this import traffic would have a similar effect on all plywood traffic, foreign or domestic, and upon lumber rates generally, since the general lumber rates apply on all plywood. To reduce the rates from Vancouver and Longview would result in a serious reduction in revenue on the transcontinental lumber traffic, according to the railroads, which is a principal source of their revenue. Moreover, the railroads concluded that to reduce the rates from the West Coast ports to OCP territory would be self-defeating because the railroads serving the Ports of Norfolk or New Orleans would undoubtedly make an equivalent reduction to retain the present competitive situation.

The present ocean rate on plywood from Japan to the North Pacific Coast is $29.75 per ton and to the Atlantic Coast range it is $41.00 per ton. Moreover, when comparable distances are considered the transcontinental rail rates are lower on plywood from Vancouver to Illinois, Kansas, Wisconsin, Colorado and Nebraska destinations than those from Norfolk.

OCEAN RATES

Testimony was adduced by a witness for the Northwest Marine Terminal Association devoted particularly to ocean and rail rates and their affect upon export-import traffic flow. The area of the Pacific in which these West Coast ports have a primary interest include India, Pakistan, Ceylon, Burma, Thailand, South Vietnam, Cambodia, Malaysia, Singapore, Indonesia, Philippines, Korea, Hong Kong, Taiwan, Japan, Okinawa, Australia, New Guinea, and New Zealand. While the Northwest Pacific ports historically have handled large amounts of export-import general cargo having origin or destination in their local areas, the Association's principle concern in this proceeding is the export-import traffic moving between the Pacific Rim countries and points in the interior United States already referred to as OCP territory. Export-import traffic is generally routed over the most economical gateway. Both ocean and inland rates are taken into consideration in making that determination. In addition, other factors are said to be taken into consideration such as frequency of sailings at the port, port terminal charges or transfer expense, heavy lift capacity at the port, and availability of services at the port not provided by the carriers such as customs, brokerage and foreign freight forwarding services. The Port of Seattle, for example, has all of these services available comparable to any North Atlantic or Gulf ports. Depending upon the nature of the traffic, time in transit can become an important element for consideration. In this regard, service between the Orient and OCP territory via the Port of Seattle ranges from 10 to 14 days. The same traffic moving through a Gulf or North Atlantic port takes longer since Japan, for example, is 6,000 nautical miles from Seattle, 8,000 miles from New Orleans, and New York is an additional 1,000 miles from the Gulf. However, time advantages are gradually being reduced via the West Coast ports due to faster vessel speeds. The Japan Line now advertises a 16 day direct service from Japan to North Atlantic ports in vessels capable of a 25 knot service speed.

About 85 percent of traffic from Japan through Seattle moves in conference steamers.[3] Certain commodities move in non-conference vessels such as automobiles that move in private carriage and charter vessels, grain moves in charter vessels exclusively, large quantities of steel and logs move by charter vessels, and high grade lumber moves in container vessels.

A witness for the petitioners takes the position that the ocean rates between Japan and the West Coast ports, on the one hand, and between Japan and the Atlantic and Gulf Coast ports, on the other, bear a distinct relationship which has been carefully maintained. To support that contention an exhibit comparing ocean rates (outbound) of four selected commodities of the Far East Conference (FEC) vs. Pacific Westbound Conference (PWC) to Japan, Philippines and Hong Kong during the period 1965 through 1971 were shown to be as follows:

A conference carrier is one that belongs to a rate making group for the purpose of establishing, stabilizing and maintaining uniform rates to be observed by all member carriers. Some carriers are members of several conferences and some are members of competing conferences. All ocean carriers serving the United States in foreign commerce and their respective conferences are regulated by the Federal Maritime Commission where their rate agreements and tariffs are filed.

Commodity	FEC contract rate	Effective date	PWC overland rate	Effective date	Dollar spread
Dyes, dyestuffs	$92.00 - 2000 lbs	Jan. 1, 1966	$76.50 - 2000 lbs	Aug. 1, 1965	$15.50
Do	94.00 - 2000 lbs	Jan. 1, 1967	78.50 - 2000 lbs	Dec. 1, 1966	15.50
Do	100.50 - 2000 lbs	Jan. 15, 1969	85.00 - 2000 lbs	Mar. 15, 1969	15.50
Do	110.50 - 2000 lbs	Apr. 15, 1970	95.00 - 2000 lbs	Apr. 15, 1970	15.50
Do	122.50 - 2000 lbs	June 1, 1971	107.00 - 2000 lbs	June 15, 1971	15.50
Electrical houseware appliances	72.75 w/m*	Aug. 3, 1970	69.25 w/m	Apr. 20, 1970	3.50 w/m
Do	79.75 w/m	June 1, 1971	----------	----------	----------
Do	76.25 w/m	July 1, 1971	72.75 w/m	June 15, 1971	3.50 w/m
Electrical lighting fixtures	75.00 w/m	Jan. 1, 1966	65.00 w/m	Aug. 1, 1966	10.00 w/m
Do	77.00 w/m	Jan. 1, 1967	67.00 w/m	Dec. 1, 1966	10.00 w/m
Do	82.50 w/m	Jan. 15, 1969	72.50 w/m	Mar. 15, 1969	10.00 w/m
Do	90.00 w/m	Apr. 15, 1970	80.00 w/m	Apr. 15, 1970	10.00 w/m
Do	95.00 w/m	June 1, 1971	85.00 w/m	June 15, 1971	10.00 w/m
Electrical equipment circuit breakers etc	73.00 w/m	May 26, 1969	64.25 w/m	Aug. 18, 1969	8.75 w/m
Do	78.00 w/m	Apr. 15, 1970	69.25 w/m	Apr. 20, 1970	8.75 w/m
	85.25 w/m	June 1, 1971	76.50 w/m	June 15, 1971	8.75 w/m

*Means rates per ton weight or measure.

The rates shown under the column headed "FEC-Contract Rate"[4] is the lowest contract rate that applies from the Gulf or North Atlantic ports to the Orient and the rates shown under the column headed "PWC Overland Rate" are the rates that apply from Seattle to Japan. No particular reason was given for the choice of dates or the commodities. Merely a request was made upon a steamship conference chairman to select the time and the commodities without any specific direction. As to the first commodity compared, dyes, dye-stuffs, there is no export or import movement of such commodity through the Port of Seattle.

In a reply exhibit introduced by the respondents shows a contrasting situation exists. The exhibit shows ocean rates on several commodities for export between Japan and the West Coast and between Japan and the Atlantic and Gulf Coasts on January 1, 1967 and on August 31, 1972. In some cases the differential is the same in 1972 as it was in 1967, in other cases the differential changed slightly, but in each instance greater not less, and in still other cases the change was substantial. For example, on green hides the ocean rate was $13 per ton, lower in 1967 than from the Atlantic or Gulf ports. On August 31, 1972, the most current date, the differential was $16.50. On powdered milk, in bags, the differential increased from $9 per ton in favor of the West Coast in 1967 to $15.25 on August 31, 1972. In the case of beans, dried, in bags, the 1967 rate from the West Coast ports was $5 per ton lower than from the Gulf ports, whereas a temporary rate was established to expire on September 30, 1972, increasing the differential to $12 per ton and at the expiration of the temporary rate the differential will increase to $17.25 per ton in favor of the West Coast.

Petitioner's witness admits to increased rates being established on various commodities resulting in substantial rate spreads. The reason given is that the ocean carriers were forced into such action due to the Economic Stabilization Program. The U. S. dollar depreciated and that meant more dollars had to be collected to cover the ocean freight charges. Initially in 1971, a so-called Currency Surcharge of 3 percent was applied. In 1972 the charge was increased to 7.25 percent. While it is not apparent from this action alone that the basic policy of preserving fixed rate differentials has changed, the fact that a flat percentage increase was applied worked in favor of the West Coast ports since they enjoy a lower level of rates as compared to the Atlantic and Gulf ports.

Conference ocean rates applying via West Coast ports between Pacific Rim countries and OCP territory are lower than the conference rates to and from points in so-called local territory, i.e., west of the Rocky Mountains. The lower OCP conference rates are intended to establish rates through the Pacific Coast ports so that the total transportation charge of that route will be competitive with charges on traffic moving through the Atlantic and Gulf Coasts.

Ocean rates on import traffic from Japan, the Japan-Atlantic and Gulf Conference and the Trans-Pacific Freight Conference of Japan have tended to follow a policy of maintaining fixed differentials on various commodities destined to Atlantic and Gulf ports versus rates to West Coast ports. This is true even though the conference carriers have taken substantial increases in their rates which as of September 11, 1972, includes the 7.25 percent currency surcharge.

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[4] The Far East Conference maintains both contract and non-contract rates. Under the contract rates the shipper guarantees to ship all or substantially all of his traffic via conference carriers. The base contract rate is lower than the non-contract rate, the latter being available to shippers unwilling to restrict their traffic to conference carriers.

RAIL RATES

Petitioners submit that the Trans-Continental Freight Bureau (TCFB) rail carriers collectively or individually establish and adjust export-import rates to and from Pacific Coast ports for a variety of reasons including; (1) movement of new products for which no commodity rate exists; (2) to meet a specific competitive situation where the West Coast is non-competitive with other U. S. port ranges; (3) to meet the competition of other (truck and/or barge) carriers either to the West Coast or other port ranges; (4) to meet a market competitive situation concerning shippers in their territory; and (5) to compete with other members of TCFB for the same traffic. Regardless of the reason behind any of their rate actions in connection with export-import traffic, it is contended the end result is that TCFB rates bear some relationship to those applying between other port ranges and the same or common origin-destination points. They further assert that rates adjusted or established for reasons (1), (2), or (3) listed above, the new rates, or at the time they are established, are related to the competing rates they are designed to meet, and in most instances, they will be made with a view toward the ocean rate spreads. Due to the ocean rate spreads in favor of the West Coast ports and the longer rail distances between the West Coast and Midwest/Eastern origin-destination points, it is contended that the rail carriers publish export-import rates to and from the West Coast at a higher level than those applicable between the same interior points and the Atlantic or Gulf ports. Petitioners maintain that once the rail export-import rate is established, successive general rate increases on a percentage basis disrupts the competitive relationship as originally intended. Thus it is argued that traffic is lost to the West Coast ports because few exporters or importers will pay a premium in terms of total transportation costs for their products, especially in view of the variety and speed of the ocean and inland services available through other port ranges.

To illustrate, exhibits were introduced to show the export-import rail rates to and from the West Coast compared with comparable movement to and from Atlantic and Gulf Coast ports when the same ex parte percentage of increase was applied to all rates. Examples taken from the exhibits are as follows:

*Machinery, stone crushers, etc., export, carloads—*rate is cents per 100 pounds*

From: Chicago and Milwaukee	Min. WT	X-256	X-259-B	X-262	X-265-B	X-267-B
To: North Atlantic ports	40M	88	94	100	106	119
West Coast ports	60M	164	174	184	195	218
Rate spreads						
(In favor of North Atlantic)	----------	76	80	84	89	99
Increase in rate spreads	----------	----------	4	4	5	10 (23c total)

*Grading and road making implements export, carloads—*rate is cents per 100 pounds*

From: Chicago, Ill.	Min. WT	X-256	X-259-B	X-262	X-265-B	X-267-B
To: Gulf ports	40M	100	106	112	119	133
West Coast	60M	164	174	184	195	218
Rate spreads						
(In favor of Gulf ports)	----------	64	68	72	76	85
Increase in rate spreads	----------	----------	4	4	4	9 (21c total)

*Chinaware, earthenware import, carloads—**rates in cents per 100 pounds*

To: Chicago and Milwaukee	Min. WT	X-256	X-259-B	X-262	X-265-B	X-267-B
From: Baltimore, Md.	30M	128	136	144	153	171
West Coast ports	50M	215	228	242	257	288
Rate spreads						
(In favor of Baltimore)	----------	87	92	98	104	117
Increase in rate spreads	----------	----------	5	6	6	13 (30c total)

*Freight-all-kinds—(Import) TOFC—**rates in cents per 100 pounds*

To: Chicago and St. Louis	Min. WT	X-259-B	X-262	X-265	X-267-B
From: Gulf ports	30M	183	194	206	231
West Coast ports	30M	406	430	456	508
Rate spreads					
(In favor of Gulf)	----------	223	236	250	277
Increase in rate spreads	----------	----------	13	14	27 (54c total)

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*The export rates shown are line-haul rates only. They do not include waterborne or port terminal charges.

**The import rates shown from the West Coast are line-haul rates including a waterborne charge of 17 cents per 100 pounds.

These random samples from the basis of petitioners contentions that general percentage increases distorts the export-import rate structure as it affects the West Coast ports and renders them less competitive than originally intended. In the example of the export rates on machinery, the export rate at the Ex Parte No. 256 level was 88 cents from Chicago to the North Atlantic ports and to the West Coast ports it was 164 cents with a spread of 76 cents favoring the North Atlantic ports. The 6 percent increase authorized in Ex Parte No. 259-B increased the rate spread to 80 cents. Each successive percentage increase caused a greater spread and at the Ex Parte No. 267 level the rate spread was 99 cents or a total increase of 23 cents over the Ex Parte No. 256 level.

It is noted that the rates shown to the West Coast on both Machinery, Stone Crushers, etc., and on Grading and Road Making Implements from Chicago are the same. Petitioners are comparing a 40,000 pound minimum rate to North Atlantic ports with a 60,000 pound rate to West Coast ports. Moreover, there are lower rates presently effective to the West Coast at the Ex Parte No. 267 level. At an 80,000 pound minimum the rate is 190 cents per 100 pounds and at 100,000 pounds minimum the rate is 176 cents per 100 pounds.

With respect to the import rate on chinaware, earthenware petitioners compare a rate from Baltimore to Chicago at a minimum weight of 30,000 pounds with one at 50,000 pounds from West Coast ports to Chicago showing a rate spread in favor of Baltimore of 87 cents per 100 pounds at the Ex Parte No. 256 level and increased to 117 cents at the Ex Parte No. 267 level. On September 20, 1972, the 288 cent rate shown from the West Coast to Chicago was reduced to 281 cents by the Trans-Continental rail carriers. Upon finding the reduction was inadequate, the carriers on September 21, 1972, proposed a further reduction to 233 cents at a minimum weight of 65,000 pounds with movement in containers in order to return the traffic to the West Coast ports. It appears that the further rate reduction would reduce the rate spread to less than what it was at the Ex Parte No. 256 level. Petitioner's witness states that the rail rate reduction was made to meet a motor carrier competitive rate effective September 25, 1971, and that a year elapsed before the rails reduced their rate. In his opinion such a time span does not demonstrate any great alertness on the part of the railroads to retain this traffic.

The rates on freight-all-kinds, import, TOFC, to Chicago and St. Louis from Gulf ports and from West Coast ports both at minimum weights of 30,000 pounds were compared. This import traffic consists mainly of high-value items moving in great volume on which speed and quality of service are very important. It has been moving through the North Pacific Coast ports in ever-increasing volume from the Far East for a number of years. About the middle of 1967 the West Coast rate to Chicago was established to allow inter-railroad competition among members of the Trans-Continental Freight Bureau, rather than competition with the railroads to the Gulf. Thereafter the railroads serving the Gulf published a competitive rate. However, the principle competition the railroads serving the West Coast had to face on this traffic to transcontinental territory was from motor carriers. It is that competition upon which the transcontinental rail rates are principally based, rather than competition of the Gulf or Atlantic ports. The inclusion of the waterborne additive shown in the rates from the West Coast to Chicago applying on freight-all-kinds was said to be necessary to make a valid comparison with the Gulf Coast's shipside freight-all-kinds rates.

Additional examples shown by petitioners wherein distortion in the export-import rates are alleged due to general percentage rate increases is on green hides, powdered milk, dried beans, and canned pineapple.

Green hides are produced principally in the Midwest but there could be a substantial movement of Pacific Coast produced hides through West Coast ports. Petitioners show the rates on green hides, for export, at the Ex Parte No. 256 level to be 127 cents per 100 pounds from St. Paul to the Gulf ports and 161 cents to the West Coast ports at a minimum weight of 80,000 pounds. The rate spread was 34 cents. Due to percentage increases the rates at the Ex Parte No. 267 level were 167 cents from St. Paul to the Gulf and 213 cents to the West Coast or a spread of 46 cents. In reply, the railroads state that the rates on green hides from the Midwest to the West Coast reflect numerous requests of midwestern producers for rate reductions so they could ship to the West Coast for export in competition with the hides produced in the West. Thus the transcontinental railroads contend that the competition they are asked to meet has been that of the Pacific Coast production of hides, rather than that of rail rates to the Gulf ports. The record shows that if different dates were selected by petitioners, different comparisons would result. In 1961 the difference in rates was 104 cents in favor of the Gulf ports. Due to a rate reduction in 1963 that difference was cut to 53 cents. By March 1968 when the Ex Parte No. 256 increase became effective, the spread was 34 cents, with a mileage difference of 1,750 miles from St. Paul to Seattle as compared to 1,210 miles from St. Paul to New Orleans. If the rate on green hides at the Ex Parte No. 267 level from St. Paul to Seattle is compared with the rate from St. Paul to New Orleans as they relate to Class 100, it appears that the Seattle rate of 213 cents is 18 percent of the applicable Class 100 rate of 1,186 cents while the New Orleans rate of 167 cents is 22 percent of the Class 100 rate of 756 cents.

The record shows that the U.S. Government is a shipper of green hides out of Memphis, Tenn., and Rockport, Mo. Geographically speaking it would be assumed that this traffic would move to the nearest port for export. New Orleans, for example, is less than 400 miles from Memphis and Seattle is over 2,000 miles. At the shippers request the railroads established a base rate on July 5, 1965, of 158 cents per 100 pounds from Memphis and Rockport to the West Coast. At the Ex Parte No. 256 level the rate became 161 cents and at the Ex Parte No. 267 level it became 213 cents. These rates correspond exactly with the rates on green hides for export from St. Paul to the West Coast. The record shows the reason for using the West Coast port was availability of vessel space and speed to the port. The rail carriers contend this shows that the rail rate per se is not the controlling factor that motivates the selection of a port and second, it shows that the railroads attempt to adjust their rates to secure the traffic for the West Coast ports.

Petitioners compared the rates on powdered milk for export through the Gulf and West Coast ports from Minneapolis and St. Paul based on a 40,000 minimum weight to the West Coast and a 36,000 minimum to the Gulf. At the Ex Parte No. 262 level, the rate spread was 39 cents per 100 pounds and at the Ex Parte No. 267 level the spread was 47 cents. The record shows that the preponderance of the powdered milk traffic for export moves at average loads of 81,600 pounds per car. When the rates based on 80,000 pound minimum at the Ex Parte No. 281 level are compared, the rate from St. Paul to the West Coast for export is 135 cents plus a waterborne charge of 18 cents for a total of 153 cents.[5] The rate from St. Paul to the Gulf ports is 113 cents which includes an added charge of one cent per 100 pounds. This latter rate became effective on October 30, 1972. Under these current rates the spread is 40 cents.

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[5] The 18 cent waterborne charge at the Ex Parte No. 281 level is in accordance with TCFB, West-Bound Export Commodity Tariff 29-0, I.C.C. 1805, item 720 Series.

However, that is not the true situation from a shipper's standpoint. If a shipper at St. Paul chooses to export powdered milk via the port of Seattle, for example, the port terminal charges are absorbed and his rate is 153 cents per 100 pounds. If he chooses New Orleans he must pay the rail rate of 113 cents plus the port terminal charges which are shown on this record to be 35 cents per ton wharfage and 520 cents car unloading per ton or a total of 28 cents per 100 pounds. The line-haul rate of 113 plus 28 cents equals 141 cents per 100 pounds. Thus the shipper would pay 12 cents per 100 pounds more to ship via Seattle than New Orleans. The distance from St. Paul to New Orleans is 1,210 miles and to Seattle it is 1,750 miles.

The rate on export shipments of dried beans at 70,000 pounds from Denver to the Gulf ports was compared with the rate at a minimum weight of 80,000 pounds from Denver to West Coast ports. The production of dried beans for export in intermountain territory is principally in Idaho. Shipments from Idaho to the West Coast ports, of course, would not move on transcontinental rates. A large percentage of the Idaho traffic moves to Latin America. In 1961, the Commission approved reduced rates on dried beans from Pacific Coast origins to Gulf ports for export. The rail carriers proposed the reduced rate to enable them to participate in the traffic which was moving by motor to the Pacific Coast ports and water beyond to Puerto Rico at a volume of 10,000 tons annually. See *Canned or Preserved Foodstuffs—Pacific Coast to Gulf,* 314 I.C.C. 569.

Canned pineapple is imported both from the Philippines and Hawaii, usually in shipload lots. The largest shipper is Dole and Del Monte is second. The greatest volume moves through California ports although some of this traffic moves by rail from North Pacific Coast ports into transcontinental territory. There is also some movement over all-water routes to the Atlantic and Gulf ports. Petitioners compared the carload rate on imported canned pineapple from West Coast ports to Chicago at a 75,000 pound minimum weight with a 60,000 pound rate from Baltimore to Chicago. At the Ex Parte No. 256 level, the carload rate from Baltimore was 74 cents per 100 pounds and from the West Coast ports to Chicago the rate was 125 cents. When the percentage increases were added the rates at the Ex Parte No. 267 level became 99 and 167 cents, respectively. However, those rates do not move the traffic according to respondents because there is a lower rate of 154 cents at 110,000 pounds per car when moving in five car lots from the West Coast at the Ex Parte No. 281 level. There is also a joint rail-water rate with the Matson Navigation Company and Sea-Train from Hawaii to inland U.S. points. In rebuttal petitioners compare the total water, rail, and port terminal charges from the Philippines to Chicago via Baltimore and via the West Coast ports, using the single-car rate via Baltimore and the multiple-car rate via the West Coast. While this method shows higher costs via the West Coast ports, it is not a true comparison. The West Coast rail rate with a minimum of 110,000 pounds per car applicable only with a five car minimum tender is in fact a rate at a 550,000 pound minimum. To compare it with a single-car rate with a 75,000 pound minimum does not prove an unreasonable relationship, especially when the distance of some 2,100 miles between Seattle and Chicago compared to some 800 miles between Baltimore and Chicago is considered. The record also shows that effective April 1, 1972, there was an increase in the ocean rates to the West Coast but no increase to the Atlantic or Gulf ports. In accordance with TCFB, East-Bound Import Commodity Tariff 30-L, I.C.C. 1762, item 700 Series, the rail respondents have restricted the applicability of the waterborne charge of 17 cents per 100 pounds on canned pineapple.

To overcome these alleged distortions the petitioners suggest (1) that the Commission restore whatever relationship existed prior to the Ex Parte No. 262

general rate increases and (2) in the case of future increases there should be a holddown on the West Coast export-import rates or in the alternative only a lesser percentage increase be allowed.

On brief, petitioners urge that the Trans-Continental rail carriers be required to apply a maximum of two (2) cents per hundred weight per percentage point of increase from and including Tariff of Increase Rates and Charges Ex Parte No. 262 forward on export-import traffic, except where a lesser cents per hundred weight amount of increase is currently in effect. On future percentage general increases it is urged that the same two (2) cents per hundred weight per percentage point of increase be observed as a maximum increase on export-import traffic moving via West Coast ports, except when the Eastern and/or the Southern carriers elect to forego any increase on export-import traffic, the Western carriers should be prohibited from establishing any increases on export-import traffic.

RESPONDENTS REPLY EVIDENCE IN SUB-No. 1A

Reply statements to petitioners position were filed by the Transcontinental Freight Bureau on behalf of a committee of its United States voting member lines consisting of the following railroads: The Atchison, Topeka and Santa Fe Railway Company; the Chicago, Milwaukee, St. Paul and Pacific Railroad Company; the Burlington Northern, Inc.; the Southern Pacific Transportation Company; the Union Pacific Railroad Company; and, the Western Pacific Railroad Company. These companies are voting members of the Transcontinental Freight Bureau. The railroads serving the Atlantic and Gulf ports did not participate in (Sub-No. 1A). However, it should be noted that the Santa Fe and the Burlington Northern serves Galveston and Houston, Texas and Southern Pacific serves New Orleans and most of the ports on the Gulf west thereof.

The railroads take the position that there never has been and should not be a relationship between transcontinental rail rates to and from Pacific Coast ports, on the one hand, and rail rates to and from Atlantic and Gulf ports, on the other hand, of the kind contemplated by the Commission when, in authorizing percentage increases, it directed that "all existing port relationships duly established by order of the Commission or recognized customs of the trade shall be maintained and preserved." Moreover, the railroads agree with the petitioners that there is no order of the Commission prescribing a rate relationship nor is any party advocating that the Commission issue such a prescription. The railroads are of the opinion that the evidence of record fails to show any discrimination at the Northwest Pacific ports, that the ports are being prejudiced in any way, and that the Commission should abstain from taking any action as a result of this proceeding which would deny them the flexibility of publishing rates to meet the competition in order to move the traffic at the lowest level to the shippers while maximizing revenues to the carriers. The railroad witnesses presented evidence in an effort to sustain that position.

Rate History—Transcontinental

In *Class Rate Investigation, 1939,* (Nos. 28300 and 28310), 262 I.C.C. 477, 264 I.C.C. 41, 268 I.C.C. 577, 281 I.C.C. 213, 281 I.C.C. 329, and 286 I.C.C. 5, the Commission prescribed a uniform scale of class rates, hereinafter referred to as the 28300 scale, to apply to all parts of the United States east of Mountain-Pacific territory. That class rate scale applied from and to groups which extended a distance of about 40 miles, and between key points in such groups, subject to the new uniform freight classification which became effective May 30, 1952. In No. 28310, the railroads were ordered to publish a new uniform freight classification, which, unlike the 28300 class rate scale, applied nationwide. In a later proceeding, *Class Rates, Mountain-Pacific Territory* and *Class Rates, Transcontinental Rail, 1950*, 296 I.C.C. 555, the Commission required the establishment of a system of class rates in Mountain-Pacific territory and between that territory and the rest of the country, and these rates were to be subject to the uniform classification. The Commission noted that from a tonnage standpoint, class rates usually accommodate only a relatively small percentage of the total traffic volume. Nevertheless the purpose of a system of class rates is not simply to furnish a point of departure for the establishment of special rates in the form of commodity rates or exception ratings. The Commission further indicated that class rates should be constructed to enable them to respond to the needs of an important segment of traffic since it is not feasible to provide commodity rates or exception ratings for every particular movement of freight. Some traffic necessarily must depend upon class rates as the only measure of charges for the transportation service performed or required.

The transcontinental commodity rate adjustment involves movement over what may well be the longest rail distances in the world, at least in terms of volume transported. In their inception, transcontinental rates were depressed to meet intercoastal water competition between the East and West Coasts via Cape Horn and, later, the Panama Canal. Unlike class rates, commodity rates are not directly related to distance but, instead, are the product of many competitive factors. The competitive factors will be discussed later.

The earlier decisions of the Commission which are cited in the *Class Rates* case, *supra*, involved the question of whether the rail rates for domestic movement between the East Coast and the West Coast, which had been substantially depressed in order to meet intercoastal water competition, could lawfully be lower than the rail rates between eastern points and intermediate interior cities such as Spokane, Wash., Reno and Las Vegas, Nev. The net result of these decisions under section 4 of the Act, with a few exceptions, was that rates to the intermediate points were reduced to the same level as the rates to the port cities where the competition of intercoastal shipping was being experienced. Stated another way, the reduced trnanscontinental rates to and from the Pacific Coast port areas held back through intermediate interior points, resulted in rate parity for an area extending a considerable distance inland from the ports. The same circumstances explain the extensive groupings on the eastern end.

Moreover, because of the intense competition between railroads serving interior points, the system of large groups extended into the Midwest and gave rather widely scattered points served by different railroads a rate parity to and from the Pacific Coast.

In addition, as a result of the interrailroad competition, wide-open routings generally prevail in connection with transcontinental rates. No one railroad serves the entire Pacific Coast area. For example: Burlington Northern and the Milwaukee serve only Oregon and Washington ports; Union Pacific reaches the Puget Sound area and it serves the Los Angeles Harbor area and some of the Columbia River ports, but not the San Francisco Bay area; Southern Pacific serves Portland and California ports, while the Santa Fe serves only California ports. Each railroad desires to encourage the maximum movement through the ports that it reaches directly, but also desires to participate in traffic to and from other ports which it does not reach. Consequently, shipments between Chicago, for example, and Puget Sound ports may be routed over the Santa Fe or Southern Pacific or Western Pacific utilizing their long-haul routes through California junctions. Conversely, shipments between Chicago and Los Angeles Harbor may be routed over the Burlington Northern or Milwaukee through junctions in the Pacific Northwest. The rates are the same whether the shipments move over the direct or indirect routes. The result is that between transcontinental territory and eastern and midwestern points, the entire Pacific Coast is, generally speaking, on a rate parity. This rate parity of the entire Pacific Coast is a characteristic of rail transcontinental rates generally. In the general structure of import-export rates applying to and from the Pacific Coast ports, the traffic must originate or be destined to points east of the Rocky Mountains. So-called local traffic which moves only 50 or even 1,000 miles through the Pacific Coast ports has no port related rates.

There is really no such thing as an export-import transcontinental rate structure. There are two tariffs which name most of the export-import rates.[7] However, if there is no specific export or import rate shown the traffic must move at the domestic rates. The domestic tariffs contain a general provision that, in the absence of a specific export-import rate, the domestic rate may be applied, subject to the rules and regulations in the export-import tariff, including shipside interchange and the addition of a waterborne charge to partially cover the additional shipside services.

PORT AND WATERBORNE CHARGES

A witness for the respondents submitted testimony concerning the port terminal charges and the waterborne charges on traffic moving between the OCP territory and the Far East through Pacific Coast ports.

The testimony of the witness is summarized as follows:

When traffic is interchanged between rail and water carrier the physical transfer of the cargo is customarily made over the facilities of a port. Prior to recent innovations resulting in additional methods of handling, all freight was loaded and stowed aboard ship on a package-by-package basis. This was known as a "break-bulk" operation. It was under this break-bulk type of operation that the steamship companies sailing between United States ports and the Far East initially developed their respective rate structures to and from the various port ranges and their absorption practices at the ports, if any. The ports likewise developed their charges for port services based on a break-bulk operation and certain terminology evolved along with the rate structures and port charges to define waterfront services at the ports. However, because of customs of the trade, the same identical words can mean different things at different port ranges, or the same service might be described by different terms. Under the break-bulk operation such terms as "dockage", "stevedoring", "handling", "carloading or car unloading", and "wharfage", developed particular meanings on the Pacific Coast, which in some instances did not correspond with the meanings accorded those terms at Gulf or Atlantic ports. The following shows the words used to describe the port services involved at the Pacific Coast ports: (1) Berthing the ship at a Wharf or pier—dockage; (2) unloading the cargo by ship's tackle from the ship's hold to a point on the dock alongside the vessel—stevedoring; (3) movement of the cargo from alongside the ship to a point of rest in a transit shed or at a designated terminal area—handling; and (4) movement of the cargo from the point of rest to the rail car and the loading of the freight into or on the rail car—carloading or vice-versa—car unloading. "Wharfage" means the charge assessed for the use of the wharf or pier when cargo is passed over, onto or under such facilities. Each of such services entails an expense which must be paid by someone. Certain of the charges accruing at the port are chargeable to the ship for which the shipowner or operator are responsible, while certain other charges are for account of the cargo for which the shipper or consignee are responsible. In the break-bulk operation, the charges for dockage and stevedoring are chargeable to the ship. The charge for handling, carloading or unloading, and wharfage are for account of the cargo. Charges against the ship are generally termed "port of Harbor charges". The charges assessed against the cargo are termed "port terminal charges". The shipper's direct interest is in the charges assessed against the cargo because he must ultimately pay such charges unless they are absorbed in whole or in part by the rail or water carriers.

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[7] Trans-Continental Freight Bureau, Westbound Export Commodity Tariff 29 series and Trans-Continental Freight Bureau, Eastbound Import Commodity Tariff 30 series.

Port Terminal Charges

The charges which are assessed against the cargo for port terminal services are published in tariffs. Each service such as handling, carloading or unloading, and wharfage generally has its own separate charge. The separate charges may be published in separate tariffs depending on the port and the service. On OCP traffic the handling charge assessed against the cargo is published as a separate charge in the steamship tariff which names the ocean rates. At Pacific Coast ports, some ports publish the charge for both wharfage and carloading or unloading in their port terminal tariffs. Other Pacific Coast ports publish only the wharfage charge, the carloading or unloading charge being published in tariffs issued by the carloading or unloading companies (or their agent) who perform the service. The ports and the terminal operators who assess and set the level of the port terminal charges are not subject to the jurisdiction of the Commission.

Amount of Port Terminal Charges

Port terminal charges are not on the same level at all port ranges nor are they on the same level at the individual ports within the same port range. The following table shows the current charges assessable against the cargo for the services indicated on import traffic from Japan on the commodity classification all cargo, N.O.S.; Freight, N.O.S.; or merchandise, N.O.S.; as the case may be:

Port	Wharfage	Carloading	Handling
Seattle	(1) $1.25	(3) $4.90*	(7) $3.35
Tacoma	(1) 1.25	(3) 4.90	(7) 3.35
Longview	(1) 1.25	(4) 4.90	(7) 3.35
Portland	(1) 1.25	(3) 4.90	(7) 3.35
San Francisco	(1) 1.25	(5) 6.18	(7) 3.35
Los Angeles Harbor	(1) 1.25	(5) 13.21	(7) 3.35
Houston	(2) .45	(6) 5.40	No charge
New Orleans	(2) .35	(5) 5.20	-----do-----
Philadelphia	No charge	(5) 5.10	-----do-----
Baltimore	----do----	(5) 4.37	-----do-----

*Increased to $5.74 effective October 1, 1972.

Notes:

(1) Rate applies per 2,000 pounds or 40 cubic feet as manifested by vessel for revenue purposes. When charges for wharfage are assessed per 40 cubic feet, they will not exceed the charges which would apply at four (4) times the rate per 2,000 pounds.

(2) Rate applies per 2,000 pounds. (1-3/4 cents per 100 pounds at actual weight.)

(3) Rate applies per 2,000 pounds or 40 cubic feet, as manifested by vessel for revenue purposes. When charge for carloading is assessed per 40 cubic feet, the charge shall not exceed the charge which would apply at double the rate per 2,000 pounds.

(4) Rate applies per 2,000 pounds or 40 cubic feet, as manifested by vessel for revenue purposes.

(5) Rate applies per 2,000 pounds.

(6) Rate applies per 2,000 pounds. (27 cents per 100 pounds at actual weight.)

(7) Charge applies per 2,000 pounds or 40 cubic feet, as manifested, subject to a maximum charge of $6.70 per 2,000 pounds and a minimum charge of 50 cents for any single shipment.

From the above table it will be noted that the wharfage charge, if any, differs between parts in the different port ranges and that the carloading charge not only differs between port ranges but also differs between ports in the same range.

At Pacific Coast ports wharfage is generally $1.25 per 2,000 pounds or 40 cubic feet as manifested by the vessel for revenue purposes, whichever is the greater. However, there are exceptions on specific commodities and the wharfage charge on the excepted articles could be more or less than $1.25. For example, at the Port of Seattle, the wharfage charge on cargo, N.O.S. is $1.25 w/m; on woodpulp, it is 63 cents per ton; and on electrical household appliances it is $1.82 per ton.

The carloading and unloading charges vary substantially according to the commodity, and in some cases the charge on the same commodity will vary according to its packaging and the type of railroad car in which the article is loaded or unloaded. For example, at the Port of Seattle, current carloading or unloading charge on empty barrels, set-up, is $1.95 per 40 cubic feet. On tape recorders, it is $15.26 per 2,000 pounds. There are other articles which do not fall in the commodity classification cargo, N.O.S. on which the carloading or unloading charges range in amounts between $1.95 and $15.26. On plasterboard when unitized or palletized for mechanical carloading or unloading the charge is $2.75 per 2,000 pounds. Otherwise, it is $11.27 per 2,000 pounds. At the Port of San Francisco, the carloading charge on the same article is different when loaded in an ordinary box car as contrasted to a DF (damage free) or reefer car. There are some commodities on which the charge for carloading or unloading are based on man hours and equipment rental and these charges may vary between the ports.

The handling charge is uniform at Pacific Coast ports, but the service performed at Gulf and Atlantic ports which is comparable to handling at Pacific Coast ports is included in the ocean rate.

This record supports and the Administrative Law Judge so finds that there is no uniformity in port terminal charges at the different port ranges, nor do the rail carriers or the Commission have any voice or jurisdiction in setting the level of those charges. The respective levels of the port terminal charges are set by those for whose account the charges are published in tariffs filed with the Federal Maritime Commission.

Absorption of Port Terminal Charges

While the rail carriers have no voice in the setting of the level of the port terminal charges, they do have the right to say whether they will or will not absorb or help absorb said charges. When the rail carrier does absorb or absorbs some part of the port terminal charges it relieves the shipper of that burden.

Basically, although there may be exceptions, it has been the practice of the railroads serving Pacific, Gulf and Atlantic port ranges to absorb or help absorb the port terminal charges on Far East traffic when destined to or originating at points in the Midwest when their line-haul revenue permitted them to do so. At North Atlantic ports, the rail carriers absorb or help absorb the port terminal charges when the inland line-haul carload rail rate is 57 cents per 100 pounds or more. At Gulf ports some of the inland rail carriers still publish "shipside" rates which include the cost of the port terminal services, subject to certain maximum absorptions. At Pacific Coast ports the inland rail carriers' tariffs provide that the line-haul carload rate includes the cost of certain of the port terminal services and the steamship lines provide for certain other absorptions in their ocean tariffs. This results in full absorption of the port terminal charges at the Pacific Coast ports regardless of the amount those charges may be. On container traffic moving through the Pacific Coast ports without being transloaded or otherwise handled, the rail carriers do not absorb any of the loading, unloading, wharfage, or handling charges. However, they do assess the waterborne charge discussed hereinafter.

Port terminal charges have increased over the years. In 1959 the wharfage charge on cargo, N.O.S., at Seattle and Portland was 70 cents per ton. It is now $1.25 per ton at both ports. Carloading on cargo, N.O.S. at Seattle was $2.12 per ton in 1959 and at Portland it was $2.23 per ton. Portland is now $4.90 per ton and as of October 1, 1972, carloading at Seattle increased to $5.74 per ton. The handling charge at Pacific Coast ports was $1.35 per ton in 1959 and it is now $3.35 per ton.

Rail-Water Agreement

Formerly, the absorption of port terminal charges at the Pacific Coast ports was provided for and made in the following manner: The inland rail tariff which named the line-haul rate provided that such rate included the cost of wharfage and carloading or unloading. The steamship tariff naming the ocean rate provided that the steamship line would absorb the cost of handling. When combined, this resulted in full absorption of the port terminal charges so far as the shipper was concerned. Under this arrangement the rail lines processed and paid the bills for wharfage and carloading or unloading. The steamer lines processed and paid the bills for the handling. An analysis of these two bookkeeping operations indicated the amounts being paid by each mode was very close to 50-50 percent. In 1950, to simplify the accounting procedures, the rail lines and water carriers entered into an agreement which provided that the combined cost of handling, carloading or unloading, and wharfage would be split 50-50. Under this arrangement, the water line involved in the movement would pay the bills for those three services and then bill the port terminal railroad for 50 percent of the cost thereof. This is the so-called "Rail-Water Agreement." Said agreement is only operative between the Pacific Coast rail and water carriers. The Rail-Water Agreement is not filed with the Commission since it does not affect the charges for which the shipper is responsible under the tariffs. On OCP traffic the tariffs provide that the port terminal charges will be absorbed by the rail and water carriers. The Rail-Water Agreement can be compared to a divisional agreement, which does not affect rates or charges in the tariffs but merely specifies how much of the absorbed charges will be borne by each mode.

The said Rail-Water Agreement was introduced in evidence in I and S Docket No. 7569, *Absorption—Lumber and Plywood—Pacific Coast Interior Origins*, 316 I.C.C. 15 (1962). At page 25 of that decision the Commission said:

The agreement, previously mentioned, which provides that the ocean and rail carriers will split 50-50 the charges which they hold themselves out to absorb, in no way relates to the public as the relations between the carriers and the public are spelled out in detail in the carriers' tariffs. This agreement neither broadens nor lessens the absorptions which they are lawfully obligated to make under their published tariffs. It merely states how the ocean carriers and the rail carriers will share the burdens of absorptions, and, as indicated, has been in existence for a number of years.

The Rail-Water Agreement was also before the Federal Maritime Commission in FMC Docket No. 75-31, *Investigation of Overland and O.C.P. Rates and Absorptions,* (1969).

Effective January 1, 1972, the percentages in the Rail-Water Agreement were modified. The agreement now provides that the rail lines will only stand 50 percent of the carloading charge on import traffic and 60 percent of the car unloading charge on export traffic, with the ocean carriers standing the balance. This means that the ocean carriers also absorb 100 percent of the wharfage and 100 percent of the handling charges.

The Waterborne Charge

The foregoing discussion has been concerned with the port terminal charges and the absorptions made in connection with the break-bulk method of operation. The waterborne charge first came into being in 1958 and it, too, was initially predicated on the break-bulk operation.

The Commission first approved the waterborne charge in *Increased Freight Rates, 1958* (Ex Parte No. 212), 304 I.C.C. 289, 351. The initial charge approved was 6 cents per 100 pounds. In *Increased Freight Rates, 1960* (Ex Parte No. 223), 311 I.C.C. 373, 416 the railroads proposed and the Commission approved a 1 cent increase in the waterborne charge. At that point the total waterborne charge was 7 cents per 100 pounds. In approving such a charge the Commission found that waterborne traffic receives more port terminal services than domestic traffic and that it is reasonable to require the users of those terminal services to take up some of the burden. Consequently, the waterborne charge was to be considered an addition to the line-haul rate even though its purpose was to help defray the cost of port terminal services. Subsequently, the Commission permitted the waterborne charge to be increased to 9 cents and later to 12 cents per 100 pounds. This 12 cents, which became effective March 4, 1967, constitutes the full amount the Commission specifically authorized to become effective when it considered the waterborne charge as a special category item. In subsequent ex parte proceedings the charge was not singled out for special treatment but neither was it exempted from the general provisions of the later ex parte tariffs. The waterborne charge, therefore, has been subject to all subsequent ex parte rate increases granted by the Commission the same as any other rate or charge. The waterborne charge is 17 cents per 100 pounds at the Ex Parte No. 267-B level.

Charges at Gulf Ports

There is no rail-water agreement at the Gulf ports. The railroads serving those ports decided to stop absorbing all port terminal charges and forego the collection of the waterborne charge. Initially this action applied to all Gulf ports except Beaumont, Galveston, Houston, and Texas City, Tex. However, shipside rates were continued at those Texas ports. As of October 30, 1972, the shipside rates were canceled with the result that absorptions of port terminal charges at all Gulf ports has been discontinued, the waterborne charge canceled, and the shipper now pays the terminal charges.

EFFECT OF COMPETITION ON RAILROAD RATE STRUCTURE

The rail respondents contend that competitive factors are so many and so varied that each rate adjustment is based upon circumstances which are peculiar to that particular rate. In other words they say that any rate adjustment should be made on a commodity by commodity basis. Thus the respondents maintain there is no uniform or recognized relationship between transcontinental rail rates, on the one hand, and, on the other hand, rail rates to and from Atlantic and Gulf ports. They submit there is only a general competitive relationship in the broadest sense of the term.

A Santa Fe witness described how rate adjustments are handled before the Trans-Continental Freight Rate Bureau concerning import-export traffic transcontinentally. Carrier and market competition play a very important part in the transcontinental rate structure. In addition, intercoastal water competition as well as truck and barge competition likewise effects the rate structure. The witness points out that the railroads are constantly watching their traffic volume, since each carrier desires to take whatever action, with respect to its rates and services, that will stimulate movement over its line and maximize its net revenues. This leads to investigations of possible rate adjustments on their own or various proposals may emanate from shippers, receivers, ports or localities. The investigation of a rate adjustment entails, among other things, an analysis of the costs to determine if the changed rate will be compensatory, movement satistics are developed and studied, competitive factors are studied, and any other factor that would have a bearing on the adjustment. Letters are written to shippers and receivers of the commodity involved and all other interested persons in order to have the benefit of their feeling in the matter. It is maintained that since each rate in the transcontinental commodity rate structure reflects differing competitive problems and costs, the rate structure is in a constant state of flux. From the investigation made by the railroads, recommendations are made to their member who attends the committee meetings of the Trans-Continental Freight Bureau where a vote is taken to make or decline the proposed rate adjustment.

The respondents cite examples from Commission decisions illustrating a variety of both carrier and market competition situations which are reflected in the transcontinental rail rate structure. In *Sugar Cases of 1951*, 284 I.C.C. 333 (1952), describes varied competition upon which the transcontinental sugar rates are based. Hawaiian cane sugar refined in California had to compete with beet sugar from California and from less distant areas of Utah, Wyoming, Idaho, eastern Colorado and Nebraska, imported cane sugar refined at Atlantic Coast ports and cane from Florida, Louisiana and Texas. The competing movements were by rail,, truck and barge, all competing with each other. *Canned Goods from Pac. Coast to E. Points*, 315 I.C.C. 769 (1962), concerned the truck, intercoastal water and market competition and the need for better equipment utilization upon which the rail rates are based. In *Gums & Resins from E. & S. to Pac. Coast*, 301 I.C.C. 255 (1957), over protests of intercoastal lines, the Commission approved reduced rail rates in transcontinental territory induced by market competition. *American Sugar Refining Co.* v. *Ahnapee & W. Ry.*, 322 I.C.C. 717 (1964), describes how market competition forced rail rates on sugar to be reduced from the West to Midwest to compete with shippers who had reduced truck rates from the East to the Midwest. ***Reduced Transcontinental Lumber Rates, 1961***, 318 I.C.C. 815 (1963), explains that the basic rates had been established in 1935 to meet intercoastal water and market competition, but inland distribution of waterborne lumber from the Atlantic ports became much more limited. However, other competitive factors, such as production in other territories, required further reductions. Finally, as pointed out by respondents, the Commission has recognized in other proceedings that many transcontinental rail rates have been on a depressed basis and were originally established to meet water competition. Almost all of the influences which affect rates are generally encountered in connection with transcontinental traffic. This is especially true as to those factors which bear directly on the value of service. See ***Increased Freight Rates, 1947***, 270 I.C.C. 403, pages 449 and 450. Thus respondents contend that each rate in the transcontinental commodity rate structure, whether domestic or export-import, reflects competitive problems which are so varied in kind and intensity that each rate adjustment is based upon circumstances peculiar to that particular rate.

PORT RELATIONSHIP

The contentions of the petitioners have been hereinbefore discussed. Consistent with those contentions, they request a finding to be made that rate relationships exist between Pacific Coast ports, on the one hand, and, Atlantic and/or Gulf ports, on the other hand, which were developed voluntarily by transcontinental rail carriers as a custom of the trade.

All parties freely admit the Commission has not ordered a prescribed relationship of rates on transcontinental export-import traffic to or from the Pacific Coast ports with rail rates on similar traffic to or from Atlantic or Gulf ports. A witness for petitioners reviewed several Commission decisions which in his opinion shows the evolution of a relationship of rates among those ports.[1] The witness theorizes that the "relationship" presently in issue evolved as a matter of voluntary pricing action by rail carriers rather than a prescribed relationship designated by the Commission. Other witnesses maintain that when there is a set of rates on a given commodity to or from a common point applying to or from competing ports or competing port ranges, some sort of relationship exists one to the other. From that premise, it is contended that the words "recognized customs of the trade" used by the Commission can have only one meaning: Since the only prescribed relationships on rail export-import rates are those covering Atlantic-Gulf ports and rates to and from the other U.S. port ranges are not prescribed the carriers serving those ranges are free to voluntarily set the rates without regard to any prescription of relationships. Therefore, this has become the recognized custom of the trade in connection with Pacific Coast and Great Lakes export-import rates.

In urging the Commission to roll back the rates on export-import traffic in order to achieve the proper port relationships before applying any increases, there is disagreement among petitioners witnesses as to the date to which the rates should be rolled-back. One witness believes the right relationship is the level of rates which prevailed after the Ex Parte No. 256 increase, effective August 19, 1967, because the relationship had been stable for a period of some 10 years. Other dates selected range from rates at the Ex Parte No. 262 level to the rates at the Ex Parte No. 265 level.

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[1] *Merchants' Union v. Northern Pac. R. R.*, 4 I.C.C. 183 (1892); *City of Spokane, Wash., et al. v. Northern Pacific Railway Company*, 15 I.C.C. 376 (1909); *Commodity Rates to Pacific Coast Terminals and Intermediate Points*, 32 I.C.C. 611 (1915); *Transcontinental Rates*, 46 I.C.C. 236; *Transcontinental Commodity Rates*, 48 I.C.C. 79; *Transcontinental Cases of 1922*, 74 I.C.C. 48; *Reduced Rates from New York Piers*, 81 I.C.C. 312; *Reduced Commodity Rates from New York Piers to Pacific Coast*, 89 I.C.C. 512: *Transcontinental Rail Rates*. 268 I.C.C. 567 (1947); *United States v. Great Northern Ry. Co.*, 301 I.C.C. 21 (1957); *Increased Freight Rates*, 1958; 304 I.C.C. 289; *Increased Freight Rates*, 1960, 311 I.C.C. 373.

Although witnesses for respondents were unable to specify what the Commission did mean when it required the railroads to maintain and preserve all existing port relationships duly established by order of the Commission or recognized customs of the trade, they take the position that there are no such existing relationships so far as transcontinental rail rates are concerned. Rather, they argue, there is only a general "competitive relationship" in the broadest sense of the term.

Historically, the transcontinental rail rate structure evolved due to the competition being sustained to the all rail overland route by ocean carriage serving the various ports. Competition became even more pronounced with the advent of the Panama Canal being completed in 1914. Rail rates were adjusted constantly in order to attract traffic to the rails from both the Atlantic and Pacific Coast ports due to water competition. The present transcontinental rates continue to reflect the influence of that competition.

The Commission, in past general revenue proceedings, has admonished the rail carriers to restore the port relationships promptly after the authorized increases became effective, however, the terminology has varied. In Ex Parte No. 206, 300 I.C.C. 633, 711, the Commission used the words "restore recognized port relationships." In Ex Parte No. 256, 329 I.C.C. 854, 882, the carriers were expected to maintain reasonable port relationships. In the further investigation in Ex Parte No. 256, 332, I.C.C. 280, 342, reference was made to the present relationship in export-import rates applying between interior points and the North Atlantic and the Texas Gulf ports, on the one hand, and the competing Gulf and South Atlantic ports, on the other hand. Upon the carriers' failure to agree on increases that would retain those port relationships, the Commission limited the time in which the carriers must publish the approved increases with no extension until the Commission's admonition was followed. In Ex Parte No. 267, 339 I.C.C. 125, 188, it was provided that all *existing* port relationships duly established by order of the Commission or recognized customs of the trade shall be maintained and preserved. In Ex Parte No. 281, 341 I.C.C. 290 at page 336, the respondents were required to maintain and preserve all *existing* port relationships (including those involving Great Lakes and Pacific Coast ports) duly *established* by order of the Commission or recognized customs of the trade. The Commission's order in Ex Parte No. 281 required the respondents to protect and maintain all *established* port relationships.

While it is true, as shown above, the Commission has used different adjectives in describing port relationships such as "existing", "established", and "recognized", petitioners have shown no concrete evidence that such a relationship or custom of the trade applies to transcontinental rates on export-import traffic to or from the Pacific Coast ports, on the one hand, and the Atlantic or Gulf ports on the other. After careful analysis, the most that can be said is that only a general competitive relationship has existed between the Pacific Coast rates and the Atlantic or Gulf Coast rates. This conclusion is strengthened in several ways. In *Cancellation of Wharfage Absorption*, 335 I.C.C. 477 at page 488, the Commission in discussing wharfage and other terminal charges at the ports stated as follows:

> Generally, the export and import rates, from and to OCP territory, to or from the southern ports are not related to the export and import rates to and from Pacific Coast

ports ***. In addition, rates from and to the committee's interior territory, as hereinbefore noted to and from southern ports are designed to be competitive with the export and import rates to and from Baltimore and other North Atlantic ports.

In *Absorption—Lumber & Plywood—Pac. Coast Interior Orig.*, 316 I.C.C. 15, the Commission stated at pages 24 and 25:

> The Gulf ports show that the present combination of ocean-rail rates on lumber and plywood from the Far East to destinations in OCP territory are generally lower via the Pacific Coast ports than via the Gulf ports, and assert that [the matter there under suspension] would increase the advantage presently enjoyed by the Pacific Coast ports. This is not the issue here. Furthermore, there is no relation as between those two groups of ports respecting traffic to midcontinent points. The rate structure from the Gulf ports is keyed to competition from the Eastern ports. See *Increased Freight Rates*, 1958, 304 I.C.C. 289, 354.

In *Increased Freight Rates, 1970, 1971*, 339 I.C.C. 125 at page 186 the Commission noted the variance in the proposed increases as between regions in Ex Parte Nos. 265 and 267. In Ex Parte No. 267 the proposed increases in the South did not exceed 6 percent, except on coal, while in the East and West a 15 percent increase was proposed. At page 187 the Commission explains its use of the language "recognized customs of the trade" when it said:

> In authorizing lesser interim increases during the pendency of these investigations, we required the respondents to maintain and preserve existing port relationships. The practical effect of this requirement was a limitation of increases on import and export traffic to the maximum of 6 percent, proposed in the South. The limitation, however, was applied only at ports on the Atlantic and Gulf coasts with respect to which relationships have been established by decisions of the Commission or by generally recognized custom and practice. Port interests at Great Lakes ports and Pacific coast ports assert that the greater percentage increases on similar traffic to their ports is unjustly discriminatory and unduly preferential and prejudicial. Our rulings herein will dispose of petitions for clarification and reconsideration filed by parties representing these port interests.
>
> Whether there exists, or should exist, a particular relationship in rates on import or export traffic passing through various seaports requires careful and detailed consideration of their particular circumstances. The origin or destination areas from and to which the traffic flows requires determination. It is most unlikely that traffic originating within 50 miles of a west coast port will flow through a gulf port merely because rates to the latter are increased in these proceedings by a lesser percentage. We could not do justice to the many commercial interests affected thereby should we attempt to resolve such matters in this proceeding, and our conclusions herein are not to be taken as a prescription of port relationships.

The record developed in the instant proceeding does not show that rail rates on export-import traffic to or from the Pacific Coast ports were ever tied to rates on traffic moving through other port ranges. The only port relationship shown in this proceeding is the general rate parity existing among the West coast ports on transcontinental traffic. It provides an example of a port relationship established by "customs of the trade".

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On brief, respondents refer to the most recent action of the Commission when the railroads filed tariffs taking the full measure of authorized percentage increase on rates on export-import traffic moving in transcontinental territory. In *Increased Freight Rates & Charges, 1972,* Ex Parte 281, 341 I.C.C. 290 at page 336, the Commission used the same language as in earlier cases, but added one parenthetical expression: "Respondents, therefore, are required to maintain and preserve all existing port relationships (including those involving Great Lakes and Pacific Coast ports) duly established by order of the Commission or recognized customs of the trade".

The petitioners herein, among others, filed protests to the carrier's tariffs contending they were in violation of the Commission's requirement quoted above. On appeal to Division 2, the export-import provisions of the tariff (Item No. 120) were investigated and suspended by order dated October 20, 1972, I. & S. Docket No. 8796, *Export and Import Rates, Ex Parte No. 281.* By Supplemental Order in that proceeding, dated October 26, 1972, the Commission authorized the carriers to refile tariffs, taking the full percentage increases, but excepting any increases on TOFC-COFC rates. The Commission's Second Supplemental Order dated November 2, 1972, explained that subsequent review revealed that Item 120, as later filed by the respondent carriers, taking the full measure of authorized increased rates on export-import traffic with no increase on TOFC-COFC rates was in accord with the said report in Ex Parte No. 281. With the issue directly before the Commission its action in permitting the respondent's refiled tariff to become effective, leaves no doubt in its belief that there was no existing relationship duly established, either by order of the Commission, or by recognized customs of the trade, as between the transcontinental rates on export-import traffic to and from the Pacific Coast ports, on the one hand, and other ports, on the other hand.

In the light of the circumstances here prevailing, the Administrative Law Judge finds that there is not now nor has there ever been an existing, established, recognized, or prescribed relationship of rates on export-import transcontinental traffic between the North Pacific Coast ports, on the one hand, and the Atlantic or Gulf Coast ports, on the other hand. Nor did the respondent rail carriers in applying percentage increases authorized in Ex Parte Nos. 265 and 267 violate the order of the Commission in *Increased Freight Rates, 1970 and 1971,* 339 I.C.C. 125, 188 which provided that:

> All existing port relationships duly established by order of the Commission or recognized customs of the trade shall be maintained and preserved.

On brief, after a comprehensive discussion, the Commission's Bureau of Enforcement arrived at the same conclusion on this issue.

EXPORT RATES ON NORTH DAKOTA WHEAT

The North Dakota Public Service Commission and the North Dakota State Wheat Commission contend that the export wheat rates from North Dakota both eastbound and westbound are excessive and unreasonably high in violation of section 1(5) of the Act; that the present inverse rate structure on westbound export wheat shipments bears no relation to cost and discriminates against western North Dakota shippers; and that the eastbound and westbound export wheat rail structures bear no relationship and are unduly discriminatory. These North Dakota interests request either a new distance related rate structure or, the restoration of the previous rate relationship between the Gulf ports and the North Pacific ports. They especially dislike the inverse rate structure which has higher rates in effect for the Western North Dakota wheat farmers than the Eastern North Dakota farmers because of the manner in which such rates were established.

In reply, the respondents through Burlington Northern witnesses, maintain that the present rate structure is adequate and that it has not been shown to be unjust or unreasonable; that the present inverse export rates, which became effective June 11, 1965, were so termed because the rates increase from eastern North Dakota to the western part of the state and then decrease going westbound from about the North Dakota-Montana border; and that such rates were established to provide competition for the Canadian export grains at the North Pacific ports and to allow Dakota farmers a choice of markets—Minneapolis or the West Coast.

Cost evidence

The North Dakota Public Service Commission introduced a cost analysis with revenue/cost relationships and contribution to overhead made by shipments of wheat from 36 North Dakota origins to Seattle, Minneapolis, and Duluth. This Commission's Rail Form A, Statement 8-64, *"Formula for Use in Determining Rail Freight Service Costs"*, was applied to the combined 1969 annual report data of the Great Northern Railway Company and the Northern Pacific Railway Company. Merger of those two railroads into the Burlington Northern System was not consummated until March 2, 1970. Other component carriers of the final merged system were not used on the theory that since they did not serve North Dakota, their performance factors would be of no value in determining Burlington Northern's costs in moving North Dakota wheat. Moreover, data for the merged system was not available at the date this study was made and the witness stresses that the Burlington Northern would not provide certain data requested to assist in adjusting the costs to a more precise level. At the hearing, cross-examination of the cost witness was waived and the cost study was admitted into evidence without objection.

Included in the cost study is a 6 percent return on one-half of the investment in road property and all of the investment in equipment used in freight service in addition to the freight portion of the operating expenses, rents and taxes not including federal income taxes.

Unit costs derived from the application of Rail Form A were applied to movements of wheat in general service box cars and in covered hopper cars originating at a selected group of stations in North Dakota. Costs from 40 origin points to Minneapolis were used, and 36 origin points were used to price out traffic to Seattle. The present rate to each destination was compared with the resultant variable and fully allocated cost for each individual movement to determine the contribution to overhead. Costs for an average load per box car was computed at 123,000 pounds and 193,086 pounds per covered hopper car. A study of 5,976 box car loads of grain totalling 738,883,619 pounds results in an average load of 123,642 pounds which was rounded out to 123,000 pounds. A similar study of 1,567 loaded covered hopper cars carrying 302,565,376 pounds produced an average load of 193,086 pounds. It is contended that these samples were selected at random and it is concluded that they are reasonable and representative of the weight in each car for use in this proceeding.

The empty return ratio of 48 percent for box cars and 108 percent for hopper cars was taken from this Commission's Statement 1C1-68, *Rail Carload Cost Scales by Territories Year 1968*, for the Western District. 100 percent empty ratio and actual miles was used for the way train movement between origin point and the gathering yard and tariff miles were increased by 10 percent for circuitous routing for the remainder of the haul.

Terminal costs are for average switching time and for average car days and also include an average cost per car for special services rather than a separate charge for grain doors for the box cars.

The line-haul, way-train and through-train costs include the average inter-intratrain switching costs as well as the system average interchange line-haul costs.

The loss and damage claims payment of 0.404 cents per hundred pounds for grain was added to the above costs. This cost of 0.404 cents was obtained from Statement 1C1-68, *supra*, and was adjusted by 5 percent for inflation resulting from increased wage and price levels for the years 1969 and 1971. The variable costs were increased by an inflation factor of 4.468841 percent to bring the variable costs to the price level of January 1971. The rates at the Ex Parte No. 267 level were compared to the variable costs developed for each movement to provide a ratio of revenue to variable costs shown for both the winter and summer rate level. In some instances, the rate levels are shown to be the same, especially to the west coast. Constant costs were then computed and added to the variable costs to provide the fully allocated costs used for each of the movements. The resultant ratios of revenues to variable and fully allocated costs for selected movements are shown in Appendix C attached hereto. According to the cost study the contribution to overhead ranges from a low of 10.99 cents per hundred pounds for the movement of wheat in box cars from Havana, North Dakota to Minneapolis to a high of 60.76 cents for a movement in covered hopper cars from Tioga, North Dakota to Seattle.

To show that increases in rates have exceeded increases in costs the Western District box car unit costs for the year 1959 was compared with the year 1969. During that 10 year period terminal carload unit costs increased 44.73 percent; car-mile line-haul costs increased 31.58 percent; and hundred weight mile line-haul costs increased 4.92 percent. Averaging these increases on a yearly basis results in 4.47 percent; 3.16 percent, and 0.49 percent, respectively. Box car rates for the period 1960 through 1971 from Beach, Alamo and Grenora, North Dakota to Minneapolis are shown to have increased by 16 cents per hundred weight whereas the costs increased 7.28 cents. The covered hopper car rates increased by the same amount per hundred pounds while costs increased only 4.64 cents. To show what this difference between increased railroad costs and increased freight rates means in dollars and cents per carload to the grain producer at Beach, Alamo and Grenora over those 10 years, the following table was submitted.

To Minneapolis From:	Inc. rates cents-cwt.	Inc. costs cents-cwt.	Increase
Box cars			
North Dakota			
Beach	16.0	7.28	$107.26
Alama	16.0	7.28	107.26
Grenora	17.0	7.28	119.56
Covered hoppers			
Beach	16.0	4.64	219.25
Alamo	16.0	4.64	219.25
Grenora	17.0	4.64	238.55

On the basis of this example it is contended that the farmer has provided the railroads with sufficient revenue to meet their relevant cost increases during the 10 years (1960 through 1971), and in addition he has paid between $107.26 and $238.55 per carload. Thus it is contended that the railroad rates on grain should be no higher than the costs of service plus a reasonable return.

Railroads Reply

The respondents generally assail the accuracy of the cost study because the formula represented by Rail Form A does not provide adequate refinements for point-to-point movements of a particular commodity. The use of some factors in the study are disputed, but no substantive cost evidence using different factors was submitted by respondents.

At the outset respondents point out that the so-called "present rates" utilized in the North Dakota Commission's cost study fails to reflect the existing wheat rate structure eastbound from North Dakota to Minneapolis on which the vast bulk of wheat tonnages originating in North Dakota presently moves. Subsequent to October 4, 1971, the due date for filing the cost study in this proceeding, new and reduced incentive rates on grain were published from origins in the states of South Dakota, Montana, North Dakota, and Minnesota to Duluth-Superior and Minneapolis-St. Paul on the lines of the Burlington Northern, the Soo Line Railroad and the Chicago, Milwaukee, St. Paul and Pacific Railroad Company. The Milwaukee restricted its publication to Minneapolis-St. Paul only. Appendix D attached hereto sets forth the new rates applicable from representative origins in the 4-state area referred to above. This rate adjustment became effective December 11, 1971 but was made subject to an investigation by this Commission in Docket No. 35527, *Wheat, Minnesota, Montana, North Dakota, & South Dakota to Minnesota and Wisconsin*. That proceeding is now pending before the Commission. Insofar as Burlington Northern is concerned, those reduced rates, which reflect approximately a 25 percent reduction from the prior rates, were established to meet unregulated motor carrier competition in the involved origin territory. The reduced rates apply on both domestic and export traffic subject to certain restrictions including 10 hours free demurrage time at origin and 48 hours free time at destination. Shipments must be billed direct from origin to destination elevator and may not be diverted, reconsigned, or held for inspection or sampling enroute. Since the reduced rates became effective, Burlington Northern has moved in excess of 30,000 cars of wheat eastbound from the origin territory.

In the event those reduced rates are not found to be unlawful, it appears that the contention of the North Dakota Commission that the present grain rate structure eastbound for export is unreasonably high from a cost standpoint is refuted. Certainly, the North Dakota Commission's cost study would not be applicable since it did not, and indeed, could not consider the later rate adjustment.

Apart from the reduced rate levels applying on eastbound grain, which were not considered in the North Dakota Commission's cost study, respondents feel that correct Burlington Northern costs were not shown by applying Rail Form A to the 1969 annual report data of only the Great Northern and Northern Pacific railroads without including as well data from the Chicago, Burlington and Quincy Railroad, the Spokane, Portland and Seattle Railway Company and the Pacific Coast Railroad annual reports. The present Burlington Northern company resulted from a merger of those railroads in March 1970. It is argued that the use of Western District factors was inappropriate because the merger has altered performance factors, has introduced new routings, and changed interchange points, among other things, which render the costs inapplicable for use in this proceeding. Respondents do not accept the use of a 48 percent empty return ratio for box cars contending that the ratio based on a 1971 analysis of Burlington Northern's operations was 54 percent and for the first six months of 1972 was 74 percent. Under the same analysis, respondents contend the empty return ratio for covered hopper cars is 103 percent. It is respondent's opinion that the tare weight used in the cost study should be increased one ton due to the use of newer and heavier cars.

Other areas of distorted costs occurs, it is claimed, in the use of system average special service costs of $5.65 per car rather than the costs of grain doors which respondents state cost more than $10 per car installed; the higher than average costs of the gathering service in North Dakota due to its high percentage of branch line mileage; the higher than average car detention for loading and unloading; the greater number of switch movements; and the higher than average clerical costs.

The respondents do not accept the use of a 5 percent inflation factor prorated between the variable and fully allocated costs and compounded to 1971. They argue that the use of a 5 percent factor understates the actual costs and expenses incurred by the Burlington Northern and in lieu thereof the following increases are considered applicable during the 1969-1971 period: transportation expenses per gross-ton mile increased 19 percent; station expenses per carload handled increased 17 percent; yard expenses per carload handled increased 41 percent; maintenance of way and structures per gross ton-mile increased 22 percent; and total freight operating expenses per gross ton-mile increased 21 percent.

APPENDIX B

Recommended sliding scale for future use of the railroads when applying for general increases in their freight rates and charges for application on both export-import and domestic rates

Base rate in cents per hundred pounds Column A[1]	Amount of each base rate to be increased Column B[2]	Base rate in cents per hundred pounds Column A[1]	Amount of each base rate to be increased Column B[2]
	Cents		*Cents*
1 thru 10	1	976 thru 1000	43
11 thru 25	2	1001 thru 1025	44
26 thru 40	3	1026 thru 1050	45
41 thru 55	4	1051 thru 1075	46
56 thru 70	5	1076 thru 1100	47
71 thru 90	6	1101 thru 1125	48
91 thru 110	7	1126 thru 1150	49
111 thru 130	8	1151 thru 1175	50
131 thru 150	9	1176 thru 1200	51
151 thru 175	10	1201 thru 1225	52
176 thru 200	11	1226 thru 1250	53
201 thru 225	12	1251 thru 1275	54
226 thru 250	13	1276 thru 1300	55
251 thru 275	14	1301 thru 1325	56
276 thru 300	15	1326 thru 1350	57
301 thru 325	16	1351 thru 1375	58
326 thru 350	17	1376 thru 1400	59
351 thru 375	18	1401 thru 1425	60
376 thru 400	19	1426 thru 1450	61
401 thru 425	20	1451 thru 1475	62
426 thru 450	21	1476 thru 1500	63
451 thru 475	22	1501 thru 1525	64
476 thru 500	23	1526 thru 1550	65
501 thru 525	24	1551 thru 1575	66
526 thru 550	25	1576 thru 1600	67
551 thru 575	26	1601 thru 1625	68
576 thru 600	27	1626 thru 1650	69
601 thru 625	28	1651 thru 1675	70
626 thru 650	29	1676 thru 1700	71
651 thru 675	30	1701 thru 1725	72
676 thru 700	31	1726 thru 1750	73
701 thru 725	32	1751 thru 1775	74
726 thru 750	33	1776 thru 1800	75
751 thru 775	34	1801 thru 1825	76
776 thru 800	35	1826 thru 1850	77
801 thru 825	36	1851 thru 1875	78
826 thru 850	37	1876 thru 1900	79
851 thru 875	38	1901 thru 1925	80
876 thru 900	39	1926 thru 1950	81
901 thru 925	40	1951 thru 1975	82

See footnotes at end of table.

Recommended sliding scale for future use of the railroads when applying for general increases in their freight rates and charges for application on both export-import and domestic rates—Continued

Base rate in cents per hundred pounds Column A[1]	Amount of each base rate to be increased Column B	Base rate in cents per hundred pounds Column A[1]	Amount of each base rate to be increased Column B
	Cents		*Cents*
926 thru 950	41	1976 thru 2000	83
951 thru 975	42	2001 thru 2025	84
2026 thru 2050	85	2201 thru 2225	92
2051 thru 2075	86	2226 thru 2250	93
2076 thru 2100	87	2251 thru 2275	94
2101 thru 2125	88	2276 thru 2300	95
2126 thru 2150	89	2301 thru 2325	96
2151 thru 2175	90	2326 thru 2350	97
2176 thru 2200	91	2351 thru 2375	98

[1] Present base rate.

Denotes amount of increase for each base rate in each block.

APPENDIX C

Petitioner's comparison of rates, variable costs, fully allocated costs, and resulting contribution from the movement of wheat between selected North Dakota origins and Minneapolis, Minn., and Seattle, Washington

(Shown in cents per hundredweight)

To: Minneapolis From:		Miles (1)	Rate (2)	Variable costs (3)	Fully allocated costs (4)	Contribution (5)	Ratio rate to	
							Variable cost (6)	Fully allocated cost (7)
			Cents	*Cents*	*Cents*	*Cents*		
1. Williston	B	632	72.50	33.19	46.82	39.31	218	155
	CH	632	72.50	27.79	41.37	44.71	261	175
2. Belfield	B	594	63.50	32.04	50.29	31.46	198	126
	CH	594	63.50	26.67	44.85	36.83	238	142
3. Berthold	B	534	61.50	28.12	44.98	33.38	219	137
	CH	534	61.50	23.50	40.30	38.00	262	153
4. Hannah	B	441	51.00	28.68	43.46	22.32	178	117
	CH	441	51.00	22.93	37.64	28.07	222	135
5. Jamestown	B	356	43.50	22.13	34.96	21.37	197	124
	CH	356	43.50	17.79	30.55	25.71	256	149
6. Hatton	B	323	40.00	22.53	34.60	17.47	178	116
	CH	323	40.00	17.72	29.74	22.28	226	135
7. Mohall	B	555	61.50	31.31	48.66	30.19	196	126
	CH	555	61.50	25.79	43.07	35.71	238	143
8. Tioga	B	593	69.50	31.16	49.36	38.34	223	141
	CH	593	69.50	26.07	44.21	43.43	267	157

Petitioner's comparison of rates, variable costs, fully allocated costs, and resulting contribution from the movement of wheat between selected North Dakota origins and Minneapolis, Minn., and Seattle, Washington—Continued

(Shown in cents per hundredweight)—Continued

To Minneapolis From:		Miles (1)	Rate (2)	Variable costs (3)	Fully allocated costs (4)	Contribution (5)	Ratio rate to Variable cost (6)	Ratio rate to Fully allocated cost (7)
			Cents	*Cents*	*Cents*	*Cents*		
9. Tuttle	B	432	50.50	26.09	40.64	24.41	194	124
	CH	432	50.50	21.15	35.65	29.35	239	142
10. Hebron	B	534	58.50	28.94	45.81	29.56	202	128
	CH	534	58.50	24.03	40.85	34.47	243	143
11. Havanna	B	309	33.50	22.51	34.27	10.99	149	98
	CH	309	33.50	17.57	29.29	15.93	191	114
To Seattle From:								
1. Williston	B	1,272	103.0	50.50	74.88	52.50	204	138
	CH	1,272	103.0	45.51	69.84	57.49	226	147
2. Belfield	B	1,363	106.0	55.10	81.04	50.90	192	131
	CH	1,363	106.0	49.44	75.31	56.62	214	141
3. Berthold	B	1,370	105.0	55.58	81.63	49.42	189	129
	CH	1,370	105.0	49.82	75.81	55.18	211	139
4. Havanna	B	1,692	92.50	66.82	98.36	25.64	138	94
	CH	1,692	92.50	60.43	91.87	32.07	153	101
5. Jamestown	B	1,589	92.50	60.33	90.07	32.17	153	103
	CH	1,589	92.50	55.12	84.80	37.38	168	109

Petitioner's comparison of rates, variable costs, fully allocated costs, and resulting contribution from the movement of wheat between selected North Dakota origins and Minneapolis, Minn., and Seattle, Washington—Continued

(Shown in cents per hundredweight)—Continued

To Minneapolis From:		Miles	Rate	Variable costs	Fully allocated costs	Contribution	Ratio rate to	
							Variable cost	Fully allocated cost
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Cents	*Cents*	*Cents*	*Cents*		
6. Hatton	B	1,606	92.50	62.89	93.09	29.61	147	106
	CH	1,606	92.50	57.06	87.20	35.44	162	106
7. Mohall	B	1,472	105.00	58.11	85.88	46.89	181	122
	CH	1,472	105.00	52.49	80.20	52.51	200	131
8. Tioga	B	1,311	108.00	52.54	77.59	55.46	206	139
	CH	1,311	108.00	47.24	73.23	60.76	229	147
9. Tuttle	B	1,665	92.50	64.30	95.34	28.20	144	97
	CH	1,665	92.50	58.48	89.45	34.02	158	103
10. Hebron	B	1,423	101.0	58.22	85.17	42.78	173	119
	CH	1,423	101.0	52.07	78.97	48.93	194	128

Source: Petitioner's exhibit A-22 for 10 selected origins showing movements to both Minneapolis and Seattle at winter rate level.

CH—Covered Hopper.

B—Box.

Contribution—the difference between rate and variable costs.

APPENDIX D

Rates to Duluth, Minnesota incentive wheat rates effective December 11, 1971

From	Rate	
	Column 1	Column 2
Minnesota		
Crookston	31	25
Fergus Falls	----------------	24
Montana		
Culbertson	66	60
Glasgow	76	70
Glendive	64	58
Miles City	70	64
Terry	67	61
Wolf Point	71	65
North Dakota		
Antelope	52	46
Beach	60	54
Belfield	56	50
Bismarck	45	39
Casselton	32	26
Cleveland	38	32
Dawson	41	35
Devils Lake	39	33
Dickinson	54	48
Fargo	31	25
Glen Ullin	50	44
Grand Forks	33	27
Jamestown	36	30
Larimore	34	28
Leeds	42	36
Michigan	35	29
Minot	50	44
Pleasant Lake	43	37
Ray	59	53
Sanborn	34	28
Stanley	55	49
Sterling	43	37
Sweet Briar	47	41
Tower City	33	27
Towner	46	40
White Earth	57	51
Williston	62	56
South Dakota		
Putney	38	32

Column 1—Rates applicable during July, August and September.

Column 2—Rates applicable except during July, August and September.

Tariff Authority—Burlington Northern Tariffs 27, 28, 29 and 30, ICC Nos. 25, 26, 27 and 28, respectively.

EX PARTE NO. 270 (SUB-NO. 4)

INVESTIGATION OF RAILROAD FREIGHT RATE STRUCTURE—COAL

Decided January 28, 1976

Report of Commissioner Coordinator, 345 I.C.C. 71, affirmed except to the extent specifically set forth herein.

Appearances as shown in the prior report, 345 I.C.C. 71, and in addition: *Wm. R. Southard* and *John M. Vittone* for Special Projects Staff; and *J. Raymond Clark, S. M. Thomasson, Jr.*, and *John Duncan Varda* for shippers and other interested parties.

REPORT AND ORDER OF THE COMMISSION

BROWN, *Commissioner:*

By report and order served March 14, 1975, 345 I.C.C. 71, the Commissioner Coordinator furnished in graphic form extensive rate, cost, operating, production, marketing, and other highly informative data related to the railroad freight rate structure on coal. The Coordinator discussed in detail 35 separate topics which he grouped into six parts[1] corresponding to areas of inquiry set forth in the order instituting this proceeding. Recommended ultimate findings were listed separately as part 7 of the report.

Exceptions were filed by various coal shipper interests to which the railroad respondents replied; and by the Western railroads to which the Special Projects Staff and Old West Regional Commission replied.

Petitions or pleadings in the nature of petitions for leave to intervene in order to file exceptions were filed by Wisconsin Manufacturers Association and Potomac Electric Power Company. Petitioners have an interest in the freight rate structure on coal and their participation will not unduly prejudice or inconvenience any party to this proceeding. Accordingly, leave for said petitioners to participate herein is granted.

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[1] Principal parts of the report are titled: (1) The Freight Rate Structure on Coal and the Traffic Flow Thereunder; (2) Impact of General Rate Increases upon Rail Transportation of Coal; (3) Disparities and Distortions in the Coal Rate Structure; (4) Uneven Effects of Increases on Individual Railroads; (5) Railroad Service; and (6) Other Matters.

Overall positions of exceptants.—Alabama Power Company and 14 other electric utility companies, identifying themselves as Certain Coal Interests (C.C.I.), take exception to the procedure followed by the Coordinator with respect to the submission and use of evidence; to all discussions, statements, conclusions, and finding with respect to revenue-cost relationship, and to the costing methodology used by the Coordinator. Tennessee Valley Authority (T.V.A.) in a separate filing adopts C.C.I.'s exceptions and argument.

Carolina Power & Light Company, Duke Power Company, South Carolina Electric & Gas Company, and Virginia Electric and Power Company (southeastern utility group) jointly except to any comparisons of commodity rates on coal with class rates; to comparisons of trainload, unit train, and other volume rates with single-car rates; and to the lack of clarity of discussions pertaining to comparative transportation revenues and transportation costs.

The exceptions filed by Potomac Electric Power Company's (PEPCO) relate to the representativeness and timeliness of record data, but are primarily directed to the Coordinator's failure to propose standards of reasonableness for coal rates from origins east of the Mississippi River.

The Wisconsin Manufacturers Association (WMA) excepts to the failure of the Coordinator to recognize that substantial multiple-car movements occur under single-car rates on coal requiring downward adjustments to reflect costs of actual operation.

Armco Steel Corporation, Inland Steel Company, and Republic Steel Corporation (central steel producer group) jointly except to the lack of clarity with respect to revenue/cost comparisons, coal commodity/class rate comparisons and the suggested need for government purchase of coal cars.

Bethlehem Steel Corporation (Bethlehem) principally excepts to the finding (No. 4) that freight rate increases have not substantially distorted the coal freight rate structure, but also calls attention to the Coordinator's failure to take action or make recommendations in reference to any of the four areas which the instituting order described as the "principal focus" of the proceeding.

The Burlington Northern Inc., Chicago and North Western Transportation Company, Chicago, Milwaukee, St. Paul & Pacific Railroad Company, Denver & Rio Grande Western Railroad Company, Illinois Central Gulf Railroad, and Union Pacific Railroad

Company (Western railroad respondents) except to ultimate findings numbered 2, 7, and 9 which call for the entry of separate proceedings to consider uniform tariff terminology, standards of reasonableness with respect to rates from certain western coal producing districts, and the development of a data bank.

All of the foregoing exceptions along with replies are more fully discussed as they relate to each of the ultimate findings recommended by the Coordinator. Such findings could only have been reached after a complete and careful examination of a massive and complex record. They are fully discussed in a comprehensive report containing a wide assortment of relevant data. We do not consider it necessary to restate all the facts that underly that report. Accordingly, prior to our discussion of each of the ultimate findings we summarize from the record the essential background information which gave rise to that finding. Careful and individual attention is given to each of the views expressed in exceptions, most of which are individually discussed. To the very limited extent that an exceptant's views are not specifically identified in our discussion they have been considered and found to be unnecessary for a proper disposition of this proceeding.

We affirm and adopt the report and ultimate findings of the Coordinator except to the extent set forth herein.

Coordinator's Ultimate Finding No. 1

That the overall freight rate structure on coal is compensatory and not unreasonably high, but some individual rates fall below the zone of reasonableness.

Background summary.—After parties had submitted evidence, a considerable portion of which consisted of rates provided as representative by respondent railroads, the Coordinator supplemented the record with adjusted regional costs related to 318 of such rates. These comparisons were grouped into tables (numbered 53 to 60) according to type of service, the principal categories being single car, multiple car, and trainload (unit train rates had not been specifically identified in all instances and hence were included in the trainload category).

The cost-rate comparisons *in toto*[2] show that 40, or 12.4 percent, of the rates fall below variable cost (most such below-cost rates are subject to annual volume conditions) and that an equal number and proportion exceed variable costs by more than 80 percent. The median rate would appear to range from 30 to 39 percent above variable cost.[3] See appendix A. The comparisons also depict fully allocated costs, with constant costs being distributed on a ton/ton-mile, car/car-mile, and dollar basis.

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[2] Of 127 single-car rates costed, 18.6 percent fall below variable cost while 7.8 percent exceed variable cost by 80 percent or more; of 64 multiple-car rates costed 9.2 percent fall below variable cost while 15.6 percent exceed variable cost by 80 percent or more; of 125 trainload rates costed, 8 percent fall below variable cost while 15.2 percent exceed variable cost by 80 percent or more.

The Coordinator also compared the various rates with the docket No. 28300 class rate scale, indicating that they range from about 3 to 9 percent of class 100, depending on type of service, direction of movement and territory involved; he said that in relation to class rates the going level of coal rates does not appear to be unreasonably high.

A comparison of rail rates with the value of coal reveals that freight charges constitute a rapidly declining proportion of the delivered cost of coal. Other evidence shows that since 1958, rail revenue per ton has declined considerably more on coal than on all other traffic originated, that per ton-mile revenues on coal are somewhat lower from western trunk line and southern territories than from official territory, and that the major coal-carrying railroads are in a satisfactory condition with no problems attributed to unprofitable coal traffic.

The Coordinator concluded that rates on bituminous coal from mine origins east of the Mississippi River are within the zone of reasonableness, relying primarily on the cost/rate comparisons. Other factors considered in reaching the conclusion were revenues, revenue trends, and lack of shipper complaints.

With respect to bituminous coal from mine origins west of the Mississippi River the Coordinator concluded that rates from origins in producing districts 16 through 22 need guidelines as to the zone of reasonableness.

Based on a consideration of rates on 11 movements having variable cost/rate ratios ranging from a low of 103 percent (single car) to a high of 191 percent (trainload), the Coordinator concluded that rates on lignite are compensatory and not unreasonably high. (Subchapter B.)

As to anthracite, cost/rate comparisons show such coal to be moving at a very low level, sometimes at a loss, but no increase is recommended because of the declining importance of anthracite and the possibility that an increase in rates might discourage production.

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[3] The comparisons thus confirm the assumption at page 2 of the instituting order of October 10, 1973, that the freight rate structures on coal, as a whole, yield revenues substantially above the carriers' variable costs of performing the service.

In consideration of all the foregoing conclusions and underlying evidence the Coordinator reached the ultimate finding that the overall freight rate structure on coal (bituminous, anthracite, and lignite) is compensatory and not unreasonably high, but some individual rates fall below the zone of reasonableness.

PROCEDURAL MATTERS

Exceptions and replies.—C.C.I. and T.V.A. dispute the statement in the Coordinator's report, *supra,* 75, that all persons were given full opportunity intially to submit evidence they deemed appropriate, including cost evidence; they request deletion of sections 26, 27, 28, 29, and 30 of such report in their entirety because such sections purport to discuss revenue/cost relationships and the compensatory nature of coal rates. They contend that inasmuch as revenue/cost relationships was not spelled out as an issue in the order instituting the subproceeding, the report goes beyond the scope of the proceeding in considering such matters, especially after repeated efforts by C.C.I. to have revenue/cost relationships identified as a specific issue were denied; and that such action cannot be justified by the fact that one group of utilities and steel companies filed cost evidence it had already prepared on the assumption that cost of service was to be an issue. They further assert that the invalidity of the report is not saved by the statement at page 226 that:

> These adjusted regional average costs will not be used in this proceeding to prescribe any maximum or minimum rates, or to order any rates canceled, reduced or increased, unless full opportunity has been given to the parties to rebut such costs

for this does not prevent the use of these studies in future general increase proceedings and rate cases. They state that they are directly affected by the report and thus have standing to insist that its deficiencies be corrected.

The Carolinia-Virginia utility group contends that use of revenue/cost comparisons without opportunity for rebuttal would constitute a grave injustice to the shipping public if the report is to be considered the "final word." They remind us that the cost study which they, themselves, entered was based on average costs for rail movements of coal to each company and did not purport to represent costs from any particular mine origin to any particular plant. In order to discourage misuse of the report these utilities urge us to conclude that discussions pertaining to comparative revenues and costs, on a unit basis, constitute preliminary data at most and do not preclude parties from providing comparative revenues and costs on movements from particular origins to particular destinations, refined to reflect current, relevant, specific transportation and operating conditions. Similar views are advanced by the three steel-producer group of exceptants.

In reply to exceptions filed by C.C.I., the Southern District Railroads assert that those parties had every opportunity to submit any evidence they thought might be helpful to the Commission, including cost representations, but refused to do so because of monetary considerations. A similar position is taken in reply by the Western lines, who state that C.C.I. is "in a box" of its own making. They maintain that just because the Coordinator did not specifically include cost data in the required evidence and the railroads did not produce it, the fact that the Commission staff produced it later does not constitute a procedural defect or in any way detract from the Coordinator's report.

Discussion.—It is obvious that a study of the railroad coal rates structure, of necessity, involves a consideration of the cost of transportation. C.C.I.'s contention that it was not given a full opportunity initially to submit cost evidence is unconvincing. It flies in the face of a specific provision in the instituting order that calls for acceptance of "cost studies prepared under recognized accounting standards"[4] and the Coordinator's subsequent assurance—at a special conference held December 6, 1973—that the proceeding had not been narrowed and that he would "utilize and accept all material" germane to the investigation. That assurance was enough to cause a group of steel producers and utilities to proceed with and subsequently introduce a cost study of coal movements to their plants. The Coordinator specifically informed counsel for C.C.I. that he would be "glad to receive" their cost study and that they would have until May 6, 1974 (5 months, the length of time C.C.I.'s counsel had said would be needed to complete a full study), to prepare and submit it. However, counsel for C.C.I. indicated that he would not have his clients spend money on a cost study unless it would be considered as part of the decision on a "specific issue which is involved in this subproceeding." At that point the Coordinator advised counsel that C.C.I.'s cost evidence could become relevant at "a later stage" but that he should receive it by May 6 in order "to consider it in the light of the Sub-No. 4 proceeding." It is apparent from the foregoing that C.C.I had ample opportunity to prepare and submit a complete cost study at the initial stage of this subproceeding had they elected to do so.

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[4] The instituting order was dated October 10, 1973. Although providing for the submission of cost evidence, the order also indicated that freight rates on coal appear to substantially exceed variable cost and that the subproceeding might be disposed of without the need for cost evidence. However, it should be kept in mind that the order in the subproceeding was issued in the context of a pending overall proceeding in which intercommodity revenue-cost relationships was a key issue. Thus, in the order of December 4, 1973, the parties were reminded that the evidence developed in this and other subproceedings would materially assist us "in considering the 'broader' questions, such as intercommodity relationships * * *." It was also observed that the findings in the subproceeding might be relevant "when considering individual rate proposals sponsored singly or jointly by the railroads at the suspension or investigation level, considering the findings in this proceeding as supplementing the record in future rail general increase cases, or recommending statutory changes."

However, notwithstanding the relevance of and opportunity to submit cost evidence, it is apparent that such data became the focus of greater consideration in the Coordinator's report than C.C.I. anticipated.[5] It is this alleged change in direction after C.C.I.'s efforts to achieve the same result had seemingly failed, that C.C.I. now claims to constitute serious procedural error.

Although C.C.I. may have declined to introduce cost evidence because it was not sure of the weight it would be accorded, such an omission does not preclude the consideration of costs. However, in the absence of any adverse impact upon the parties, cost consideration was clearly justified as a function of investigation for as set forth in the instituting order, this subproceeding directly involves "the lawfulness (under section 1 and other sections) of all rates on coal." We are convinced that the Coordinator's findings—other than a need for rephrasing as subsequently discussed herein—in no way affect adversely the rights of any party to this or subsequent proceedings involving individual rates on coal.

It is not enough for C.C.I. merely to assert that there was a deficiency in notice as to specific elements includable in the issues under consideration. Procedural irregularities are not per se prejudicial; each case must be determined on its individual facts. Here C.C.I. makes no attempt to explain how they might be prejudiced by the Coordinator's consideration of cost data at this stage of the proceeding or how they might be hurt by our adoption of overall findings based on such data. Neither do they claim that their own cost evidence, if initially filed, would have produced ultimate findings or underlying conclusions significantly different from those recommended by the Coordinator. Those findings, as adopted herein, determine no right or obligation, nor do they alter

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[5] Other Ex Parte No. 270 proceedings instituted after this proceeding had commenced specifically identify cost-revenue relationships as an area of consideration on which evidence is requested.

C.C.I.'s future status or condition.[6] They are merely the formal record of conclusions reached after study of comparisons based on data regularly collected and developed by the Commission.[7] Our contemplated use of such data will in no way alter the burden of proof required in connection with individual rate or general increase proposals and will not preclude any party from providing other cost data with respect to particular movements. To the contrary, we encourage all parties to continue to assist us in a continuing search for improved methods of transportation costing by submitting the most relevant costs for each situation.

It is apparent from the foregoing that if there were a procedural error with respect to the submission of cost evidence, none of the parties have been prejudiced thereby and there has been no denial of due process.

REPRESENTATIVENESS OF RATES COSTED

Exceptions and replies.—C.C.I. and Pepco contend that the rate sample costed by the Commission's staff was not representative. In support of that position C.C.I. point out that the movement of coal to utility and steel industries, which reportedly accounts for 83 percent of the market, does not move as single-car shipments, but that 41 percent of all the movements making up the traffic sample used in the report are single-car shipments. They also argue that based on the 1972 1-percent waybill sample, the average haul for bituminous coal is 284 miles which is but 58 percent of the average haul of 489 miles for movements shown in the report;[8] and that the average revenue per ton based on the waybill sample is $3.56 compared with an average rate of $5.02 for movements shown in the report.[9] Pepco asserts that the rate sample is deficient because it fails to include any movements covered by the principal eastbound trainload tariff (TL-CTR Tariff Bureau Tariff 115, I.C.C. G-13).

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[6] Demonstrating its tentative nature the Coordinator observed that the costing procedure does not necessarily take into consideration the "many factors" affecting the cost of shipments moving under trainload rates or the fact that shipments moving under annual volume single-car rates "frequently move in multiple-car service." A similar observation is appropriate with respect to certain single-car movements not subject to annual volume requirements.

[7] Similar regional cost data have frequently been used by the Suspension and Fourth Section Board as a guide in evaluating protests and replies with respect to the reasonableness of individual rate proposals. The advance preparation of such data on a much larger scale will facilitate that evaluation. Additionally, the ready availability of that material and similar cost data developed in other Ex Parte No. 270 subproceedings will permit a more thorough and objective analysis of general increase proposals and will materially assist us in determining which commodities and types of movement, considered in the light of the transportation services actually performed, are paying more or less than their fair share of the transportation burden.

[8] U.S. Department of Transportation, Federal Railroad Administration, 1972 Carload Waybill Statistics, Territorial Distribution, Traffic and Revenues by Commodity Classes.

Discussion.—Pepco's contention that major eastbound trainload movements are not included in the rates considered in the report is completely unfounded. Out of a total of 43 movements included in Table 57 (commences at page 259 of the report) 17 movements are under rates published in "Eastbound Trainload Tariff," Trunk Line-Central Territory Railroads Tariff Bureau Tariff 115, I.C.C. G-113.

Under Part 1 of the order instituting this investigation all parties were requested to furnish "maps, diagrams and representative rates" depicting the freight rate structures on coal and the flow of traffic thereunder. Thus the selection of "representative" movements was left to the discretion of each party. Although all parties had ample opportunity to contest the representativeness of the movements that had been submitted pursuant to the instituting order, no questions as to representativeness were raised in any of the rebuttal statements. In fact, neither C.C.I. nor Pepco filed a rebuttal statement.

Nowhere in the report did the Coordinator represent that the movements submitted by the railroads were based on a probability sample nor did he find that they are in fact representative of coal traffic handled in the United States. The Coordinator merely had tabulated the movements which had been submitted by the railroads as representativeness based on the judgment of traffic officials for each of the territories involved.

Although it may be that the movements costed are not precisely representative on a proportion basis, e.g., proper number of movements according to type of shipment and territory in relation to the total coal traffic, this situation does not necessarily detract from the ultimate finding that the rates on coal, with few exceptions, are compensatory and not unreasonably high. Stated differently, while the representativeness of the movements has not been established, the fact remains that 81 percent of the single-car rates,

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[9] The simple average of movements included in the report was developed as follows:

Type of movement	Average haul (miles)	Revenue per ton
Single car	418	$5.46
Multiple car	489	5.27
Trainload	556	4.43
Total	489	5.02

91 percent of the multiple-car rates and 91 percent of the trainload rates shown in the report exceed variable costs.

COST MATTERS

Exceptions and Replies.—C.C.I. contends that the regional cost data on which the report relies are so inadequate and distorted that they cannot be used as a measure of revenue/cost relationships or of the compensatory nature of unit train, trainload, and other volume rates on coal. They maintain that regional costs are of little value in determining precise costs of specific movements because they were not adjusted to reflect actual conditions under which traffic is handled, that the data on which the report relies is not supported by any field or specific studies, and that in some instances prior adjustments based on limited analyses used in the Commission's Burden Studies were ignored. Consequently, they assert, the variable costs depicted in the report for single-car, multiple-car, trainload, and unit train shipments are grossly overstated.

C.C.I. also contends that the report is in error to the extent that it relies on fully allocated costs, asserting that any association of constant costs with individual traffic is an arbitrary statistical attempt to allocate the unallocable. A somewhat similar position is taken by Pepco who also objects to the report's failure to explain the significance of such costs.

Pepco's exceptions are primarily directed to the report's failure to propose standards of reasonableness on movements from origins east of the Mississippi River. This utility maintains that "open end" rate making with no standard in terms of cost for the upper limits of the zone of reasonableness is contrary to the public interest, stating that the Coordinator has recognized the need for such standards in the case of coal originating west of the Mississippi River by recommending that the matter be made the subject of a separate investigation. Pepco objects to the vagueness of the statement that overall rates on coal are "within the zone of reasonableness," contending that the Coordinator either ignored the zone, or, as indicated by the spread of revenue/cost relationships, that the zone is so wide as to be without practical limitation. The exceptant also calls attention to the Coordinator's failure to explain the basis of the conclusion that variable cost/rate relationships of 162 and 176 percent are not unreasonably high and why rates substantially in excess of fully distributed cost are not found to be unreasonable.

Wisconsin Manufacturers Association contends that where substantial multiple-car movements occur under "single-car" rates downward adjustments should be made in origin and destination costs.

The southeastern utilities and steel producers are particularly concerned that the cost data and discussions in the report, pages 225-280, might be used in connection with individual coal movements. They want us to confirm, beyond the statement at page 226 of the report concerning use of revenue/cost comparisons contained in the report, that such comparisons do not mean that increases in individual coal rates are justified, lawful or otherwise appropriate regardless of individual circumstances and conditions. These exceptions assert broad brush costing method employed was highly generalized with average costs which do not reflect the individual circumstances attending any particular movement of coal.

In reply to the various representations of the shippers the Western lines note that the regional cost approach used by the Coordinator is not designed to provide the exact cost of individual railroads, but to provide a reliable and accurate yardstick for determining average costs for shipments over various roads and routes within the region; they stress that the ultimate findings do not preclude the making of a study on any one particular coal movement. A somewhat similar response is offered by the Southern lines. The carriers stress the importance of fully allocated costs in resolution of questions as to whether carriers are able to finance needed new equipment and whether in the long run coal pays its full share of transportation cost. Finally, they assert that no sound reasons are advanced for taking issue with the finding that coal rates do not exceed maximum reasonable levels.

Cost adjustments.—Adjusted regional average costs were used to evaluate the typical or representative movements of record. In development of such costs no attempt was made to develop precise costs for specific movements or to reflect actual conditions under which the traffic was handled. In order to develop such information additional data, none of which was of record, would be required. The data can be obtained only from the carriers themselves or through special, time-consuming and expensive studies. Consequently the Coordinator had no alternative but to utilize average costs for the movement of coal traffic that had been developed through a highly generalized approach. As explained in the report, the adjustments made to the territorial average costs were based, in part, on in-house studies as well as on past cost cases in which cost analyses had been prepared.

C.C.I. correctly observes that the report does not strictly adhere to the "burden study" adjustments for costs to move coal and iron ore traffic. However, such costs are based on broad averages generally applicable to volume and trainload shipments applied to the total 1-percent sample which includes single-car shipments; that method is pursued to expedite the study because most coal moves in multiple and trainload lots. Stated otherwise, the same across-the-board adjustments are utilized in the burden studies regardless of the type of shipment involved. Here, the Coordinator sought to develop costs for the so-called representative movements based on the specific type of shipments involved and made additional refinements not utilized in the burden studies, such as: actual route of movement, regional breakdown of miles, weight of individual shipments, actual number of interchanges, et cetera. We believe such adjustments reflect a reasonable portrayal of costs of the various types of shipments involved and are appropriate for the purpose here used.

Specific criticisms directed at the development of costs, along with our comments in regard thereto, are set forth in appendix B hereto.

Use of fully allocated costs.—C.C.I. improperly infers that the report relies on fully allocated costs in reaching its ultimate conclusions. In finding that "the overall freight rate structure on coal is compensatory and not unreasonably high," the Coordinator relied not on fully allocated costs, but relied exclusively on the variable costs of transportation. Fully allocated costs were depicted primarily for informational purposes insofar as this subproceeding is concerned. This was in keeping with the Coordinator's purpose to develop a comprehensive and educational report and there was no need for him to explain the significance of data upon which he did not rely.

The report allocates constant costs in three separate ways: ton and ton-mile, car and car-mile, and dollar bases. Ordinarily rates on a commodity should cover not only its variable cost, but also yield enough above such costs to cover the carriers' constant costs of transportation burden. Thus, statistical apportionment of constant costs may be helpful in appraising the relative level of rates. We will not limit our ratemaking powers to the use of variable or incremental costs in ignorance of the existence of constant costs. Recognizing that no single method of cost allocation has been found universally applicable to all transportation services, the Coordinator appropriately elected to show the allocation of constant costs in three separate ways.

Cost as a standard of maximum reasonableness.—Pepco alleges that the Coordinator failed to explain his conclusion at page 315 that variable cost/rate relationships of 162 percent and 186 percent are "not unreasonably high." However, such conclusion does not affect any of the ultimate findings herein; furthermore, his statement was made in a discussion that related exclusively to cost factors without inclusion of other criteria of reasonableness.

Pepco objects to findings that rates on eastern coal are compensatory and not unreasonably high and that they are within the zone of reasonableness, i.e., the Coordinator should have spelled out a zone of reasonableness in which the upper level may be measured arithmetically in terms of cost. No precedent whatsoever is offered to support such a contention. The utility merely states that ratemaking without a standard in terms of cost for the upper limits of the zone of reasonableness is contrary to the public interest, and that the Coordinator recognized a need for such standards in the case of coal from origins west of the Mississippi River by recommending that this matter be made the subject of a separate investigation.

The fact that the rate structure in certain western coal producing districts may require guidelines as to zone of reasonableness is clearly no indication that in the determination of those guidelines a mathematical standard in terms of cost will be given consideration. On the contrary, the report specifically cites not cost, but new and unprecedented market demand and intermodal competitive factors as circumstances and conditions that distinguish coal production and transportation in the west from coal production and transportation in either the East or Midwest. The report does not even mention cost although it does refer to some generalized rate comparisons.

We agree that cost of service is a highly important criteria of rate reasonableness, but it is by no means the only one. Questions of rate relationships, value of service, effect on movement of traffic, and market or carrier competition are among the many factors that have long been considered in determining the reasonableness of rates. These criteria cannot be reduced to a precise formula. However, over the years, they have been enunciated on a case-by-case basis, with each factor of reasonableness being accorded varying degrees of consideration depending upon the particular circumstances and conditions involved. See *Coal from Southern Mines to Tampa and Sutton, Fla.*, 318 I.C.C. 371, 389 (1962), citing *Kansas City Board of Trade* v. *United States*, 314 U.S. 534, 546; *Seaboard Air Line R. Co.* v. *Southern Ry. Co.*, 329 I.C.C. 17, 28 (1966), and *Chicago Board of Trade* v. *Illinois Central R. Co.*, 329 I.C.C. 529, 532 (1967). Pepco offers no valid reason why we should now consider an abrupt change from our long-established policy favoring rate flexibility. Consequently, we see no reason to disagree with any of the Coordinator's findings merely because they do not spell out precise standards in terms of cost for the upper limits of the zone of reasonableness.

RATE COMPARISONS

Comparisons of commodity rates and class rates exceptions and replies.—The steel producer and southeastern utility groups question the value of comparing coal commodity rates with class rates. They contend that rail rates on bituminous coal are commodity rates, responsive to all factors bearing upon the movement of such commodity, and should not be governed by strictly class rate considerations. They maintain that comparisons of class and commodity rates constitute an erroneous oversimplification and departure from the long-established principle that commodity rates, especially those on coal, are not governed by class rate considerations. They assert that any attempt to relate class and commodity rates could result in unnecessary discord and litigation and ask us to excise from the report discussion of such comparisons, or at least to find that they are of but negligible or peripheral significance. In reply, the southern district railroads point out that comparisons of commodity rates with docket No. 28300 class rates have long been used as measuring sticks for determining the position of such commodity rates within the zone of reasonableness. They also observe that exceptants do not challenge ultimate conclusions or the supporting finding that class rate comparisons show no unreasonable pattern in the existing rate structure. The Western roads call attention to the fact that the report does not require coal rates to bear a precise relationship to class rates, and state it simply notes various percentage relationships, somewhat as a zone of reasonableness. These carriers make clear that they do not advocate the comparison of rates on heavy bulk commodities with class rates because such a comparison involves unlikes. Nevertheless, they observe that such comparisons have been upheld for the purpose of avoiding prohibited preference and prejudice under section 3(1) of the act, citing ICC docket No. 34348, *Chicago Board of Trade* v. *Illinois Central R. Co.*, et al., 344 ICC 818, affirmed *Chicago & Eastern Illinois Railroad Company*, et al., v. *United States*, 384 F. Supp. 298 (1974).

Discussion.—The exceptants provide us no specifics as to the basis of their objection to comparisons of any kind between class and commodity rates. Their concern is particularly puzzling in view of the fact that all of their coal is received from eastern origins from which the Coordinator found no appearance of any unreasonable pattern of coal rates insofar as relationships to class rates might be concerned. We find nothing in the Coordinator's discussion of such matters to be irrelevant or a source of discord and litigation. Moreover, the report provides no reason for any party to question the obvious fact that the rates under which coal moves are in fact commodity rates and as such are responsive to all factors bearing upon the movement of that commodity. Neither does the report suggest that coal rates or any other commodity rates are governed by the same considerations as class rates. Class rates are made primarily with regard to distance, but as the report indicates, rates on coal are influenced by a variety of factors, the most important two being cost of service and competition. Just because distance is not controlling does not mean that it should be disregarded.[10] The steel producers correctly state that "all factors" bearing upon the movement of the commodity involved must be considered. Yet, beyond expressing alarm at the Coordinator's docket No. 28300 approach they fail to suggest any other basis for considering the distance factor in assessing the reasonableness of the overall freight rate structure on bituminous coal.

Although we have in the past prescribed distance scales that bear specifically upon the movement of coal, such scales were designed for limited territorial application and have seldom been otherwise used. The Coordinator wisely selected a broadly accepted scale of universal application as the most suitable common denominator for considering freight rate structures throughout the United States.

The report appropriately depicts the range in percentage relationships of coal rates to class rates. However, quite properly, it does not relate particular coal rates to the docket No. 28300 scale or indicate that coal rates in general should bear a particular relationship to that scale. It merely provides a composite of percentage relationships on unidentified movements for varying distances which the Coordinator subsequently found to be compensatory and not unreasonably high. Whether particular rates on coal may be compared with class rates to establish preferences and prejudices prohibited under section 3(1) is not here in issue. We question the likelihood that it ever will come into serious issue as long as the differences in rate treatment are justified by other transportation circumstances and conditions surrounding the movement of coal.

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[10] The Coordinator recognized at page 348 of the report that the rapid expansion of multiple carload, trainload, and unit-train rates has greatly diminished the significance of distance as a factor in the coal rate structure.

Comparisons of volume rates and single-car rates exceptions and replies.—Expressing concern that the statistical data in the report may be misunderstood or misapplied, the southeastern utilities ask us to find that comparisons of volume rates with single-car rates in terms of earnings (per net ton, per car, per car-mile, et cetera) are without probative significance. They stress that by 1980 more than 85 percent of rail coal traffic will move under volume rates that have been fostered by the Commission's policy of encouraging rate innovation and contend that comparisons of such rates with single-car rates at different times over the years overlook important distinctive rate factors that the Commission has fostered. In reply, the Western railroads point out that pursuant to the instituting order they submitted evidence comparing single-car and volume rates and observe that the comparisons used in the Coordinator's report are simply consistent with the order of investigation. They state that it is appropriate to compare earnings between single-car and volume coal movements since they involve identical commodities and, for the most part, identical cars and per-car weights, as well as distances. Observing that many volume rates on coal have been made to meet competitive conditions, these carriers indicate that they must constantly review the competitive necessity for the rate differences between single-car and volume rates on coal.

Discussion.—The southeastern utilities do not claim that any part of the report itself compares earnings under single-car rates with those under volume rates; their concern is directed to the future use of data contained in the report. We see no reason for such concern. There is little, if any, data in the report that is not readily available from various other sources. One of the great contributions of the report was to bring into one package a large array of pertinent data related to the coal freight rate structure. The utilities, themselves, recognize the report as "a document of tremendous breadth." The Coordinator explained that the report is comprehensive because it was "designed to be educational" in nature. It was his intent, as it is ours, to make available for appropriate use by carriers, shippers, concerned members of the public and this Commission, credible data relevant to the railroad freight rate structure. Additionally, as detailed in Ultimate Finding No. 9, we propose to expand and keep current a readily available data base on coal. It would be completely inconsistent with our objective of maintaining a continuing public educational process to now restrict the use of such data.

We recognize that volume rates reflect an evolution in railroad ratemaking.[11] Any evolution includes not only the resultant more complex form but also its relationship to the simpler form from which it developed. In this instance the single-car rate is the simpler form and the volume rates are the more complex forms. Therefore, although these types of rates may significantly differ in some respects,[12] it does not follow that there is no relationship between them. In fact, most of the multiple-car, trainload, and annual volume rates are constructed in direct relation to single-car rates.[13] Unit train rates are apparently constructed without being directly related to single-car rates, but the fact that a relationship is not apparent does not alter the probability that the level of single-car rates—as well as any annual volume, multiple-car, or trainload rates that might apply—was given consideration in establishing the unit-train rate.

We agree that more than mechanistic and routine comparisons between single-car and volume rates—as well as between different types of volume rates—are required in order to give real meaning to the comparisons between the two. However, where similar cars, carweights, territories, and distances are involved and a reasonable explanation is provided for any dissimilarity in applicable tariff requirements, comparisons of single-car and volume rates can be of significant probative value.

STATEMENTS RELATIVE TO LEVEL OF RATES

Exceptions and replies.—C.C.I. excepts to various statements in the report, which, they contend, suggest that coal rates, particularly in the East, are on a relatively low level. They specifically contend that in discussing rate adjustments occasioned by competitive conditions during the 1962-64 period, the report at page 339 erroneously refers to such adjustments as "reductions" in rates on eastern bituminous steam coal; that such a conclusion is not supported by the cost testimony on which the report relies; and that trainload and unit-train rates referred to were not reductions but new rates for a new service at a higher level in relation to costs than the single-car rates whose use they replaced. These utilities also object to the conclusion at page 92 that "rail transportation costs are of declining importance in the marketing of coal" as being unwarranted from the fact that such costs are at a lower percentage of destination value than they were 40 years ago. Further, they contend that the statement at page 161, which reads: "Rates from eastern origins have been held at a relatively low level," is unsupported and erroneous. Finally, they object to the conclusion at page 352 that the uneven effect of a 54.54-percent increase in coal revenue by eastern bankrupts compared with but a 22.32-percent increase by southern district roads during the same period (1966-1972) was "due to factors largely beyond the control of the Commission," contending that the Commission sought to use general increases on coal as a tool to help solve the problem of the eastern bankrupts.

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[11] New rate forms are continually evolving and we applaud all concerned for their creative efforts. We will continue to support such efforts through our policy favoring rate innovation and modification designed to promote operating efficiency and to respond to the demand of the market place.

[12] Although specific factors relating to volume rates are often many and varied, at times the only significant factor distinguishing one rate form from another is market competition. Railroad management apparently reviews on a regular basis the competitive necessity for differences in rates and rate forms.

[13] Although traditional differentials are sometimes disregarded in the sense that volume rates are not made applicable from all origins in the single-car rate groups, to the extent that they do apply the volume rates are related to single-car rates from the same origin to the same destination.

Discussion.—The trainload rates of the early 1960's did in fact represent a new type of service, as C.C.I. asserts. Consequently, the reductions to which the report refers at page 339, were not reductions in existing single-car and annual volume rates, but were reductions in transportation cost to the utilities.

The conclusion at page 92 of the report that "rail transportation costs are of declining importance" is but the Coordinator's characterization of the facts set forth in table 7 (pages 92-93). That table shows, for example, that between 1962 and 1972 the proportion of rail rates to the destination value of coal dropped from 42.6 percent to 32.8 percent. A more recent issue of the U.S. Bureau of Mines publication from which table 7 was prepared, shows that the proportion of rail rates to the destination value of coal dropped from 32.8 percent in 1972 to 20.8 percent in 1974. In view of the above, it is apparent that although the Coordinator may not have been completely accurate in stating that rail transportation costs "are of declining importance in the marketing of coal," he would have been clearly justified in concluding that such transportation costs constitute a significantly declining proportion of the delivered cost of coal.

The statement that "rates from eastern origins have been held at a relatively low level" was made in limited reference to certain lake cargo movements. The record indicates that lake cargo rates were established and have been maintained at a lower level than track delivery rates to the same ports and that sweeping reductions in lake cargo rates were made effective during the 1950's and 1960's to meet the competition of other fuels or midwestern all-rail coal. The fact that the statement in the report fails to specify the rates to which it relates the level of lake cargo rates, does not make it erroneous. In any event the statement does not directly bear upon any of the ultimate findings.

C.C.I.'s contention with respect to the cause of uneven effects of general freight increases will be discussed in connection with Ultimate Finding No. 5.

SUMMARY

In sum, all parties to this subproceeding had ample opportunity to submit cost evidence and no one has been prejudiced by the consideration of the study of adjusted regional average cost. Although the parties had ample opportunity to contest the representativeness of rates submitted by respondent railroads, they did not do so. Consequently, the representativeness of the involved movements was not in issue and it was appropriate for them to be costed as submitted. In the development of cost no attempt was made to establish precise costs for specific movements because necessary information was lacking from the record. Consequently, average regional variable costs were developed in a highly generalized approach and are not to be applied to individual movements. The Coordinator's finding that the overall freight rate structure on coal is compensatory and not unreasonably high was based on his analysis of such variable costs. It was reinforced by a broad comparison of coal rates to the docket No. 28300 scale which showed no unreasonable pattern of coal rates. The report makes no comparisons of earnings on single-car rates with those on volume rates, but this will not preclude the use of such comparisons where a relationship between such rate types is properly explained. Certain statements in the report relative to the overall level of coal rates call for clarification to avoid possible misapplication but this does not bear upon any of the ultimate findings.

As previously indicated, the Coordinator's report is an advisory opinion and we do not plan to revise any rates on the basis of findings or conclusions reached therein. This means that we will neither prescribe, cancel, reduce, nor increase any rate on the basis of these adjusted regional costs unless full opportunity is provided for the rebuttal of such cost computations. The evidence in the Coordinator's report does indicate that there exists a range of cost/revenue relationships among different segments of traffic which the parties might appropriately call to our attention in connection with proposed rates adjustments. No party's rights are prejudiced by the use of such cost computations to support the finding that the rates on coal are, with few exceptions, compensatory and not unreasonably high. We consider such a use to be entirely appropriate and clearly within our rule making powers.

Accordingly, we will affirm the Coordinator's ultimate finding that the overall freight rate structure on coal is compensatory and not unreasonably high and make clear that such finding does not determine the reasonableness of individual rates.

Coordinator's Ultimate Finding No. 2

That a need exists for a revised uniform terminology in tariff schedules on bituminous coal in order to improve their understandability, feasability of application, freedom from controversy, and facilitation of the regulatory process.

Background summary.—The Coordinator's report expresses concern over definitions of service in tariffs,[14] particularly those for multiple-car, trainload, and unit-train service. The following examples are offered to illustrate the sort of confusion that grows out of present terminology: (1) a currently effective tariff calling for a per-shipment minimum of 1,500 tons (an amount that can be handled in 15 cars) is designated as a "trainload" tariff,[15] whereas rates applicable on a per-shipment minimum of 30 cars have been denoted as "multiple-car" rates[16]; and (2) in an investigation and suspension case relative to application of increases authorized in Ex Parte No. 281 several shippers contended that movements to their facilities were "unit-train" movements ("unit-train" movements were subject to lower holddowns than other movements) whereas the carriers contended that those movements were "trainload" movements.[17] The report thereupon recommends the institution of a proceeding for the purpose of defining the terms unit-train, trainload, multiple-car, annual volume and other conditional services so that these terms may be used uniformly in carrier tariff publications thereafter.

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[14] Inasmuch as tariff requirements and actual operations must be consistent with each other definitions of service should be the same whether used in tariffs, service orders, and other publications.

[15] B&O Freight Tariff C-199-A, ICC 3363—Eastbound Trainload Bituminous Metallurgical Coal Tariff.

[16] *Illinois Intrastate Coal Rates to East St. Louis, Ill.*, 304 I.C.C. 769, 771 (1958).

[17] I. and S. Docket No. 8860, *Bituminous Coal Within Eastern District*, 346 I.C.C. 590 (1974).

Exceptions and replies.—The Western railroads take the position that there is no need for further Commission action in this matter because tariff terminology and nomenclature are already regulated by a Commission bureau (Bureau of Traffic), that a variety of circumstances surrounds the movement of bituminous coal that are reflected in applicable tariff schedules, and that carriers already have a duty to publish tariff schedules which can be understood and applied without misinterpretation.

The Special Projects Staff generally agrees with the contentions of the Western railroads, but indicates in reply that standardized definitions of multiple car, trainload, and unit train would aid both the carriers and the Bureau of Traffic in ensuring that tariffs are understandable and applicable without misinterpretation.

Discussion.—The principal issue here involved is whether the need for uniform terminology is such as to warrant the institution of a separate proceeding for that purpose.

We share the Coordinator's desire to improve the understanding, feasibility of application, freedom from controversy, and facilitation of the regulatory process with regard to the tariff schedules on bituminous coal as well as on all other commodities. This desire becomes more pronounced when consideration is given to the large number of tariffs and the ever-widening variety of conditions attached to the movement of but one commodity—coal.

We are also convinced, as is the Coordinator, that regardless of how complex or baffling the economics of the movement of coal may be, the making and filing of rates cannot be conducted in ignorance of the complex shipping and receiving interests for which the rates are designed; and that the rail rate structure must be flexible in order to meet the changing needs of the marketplace of the coal industry. The record demonstrates that those needs are changing more rapidly and critically than at any time in history, but that they are nevertheless being met today largely because of a flexible rail rate structure fostered by this Commission's now well-established policy that permits carrier and shipper to arrive at rates tailored to the circumstances and conditions surrounding the particular movement involved. That policy produced new services and pricing techniques along with industry terminology to describe them.

The principal techniques currently used to relate transportation service and pricing to the conditions surrounding the production and marketing of coal evolved from conventional carload rates in the following order of sequence: multiple-car, annual-volume, trainload, and unit-train rates.[18] Of the foregoing terms, multiple car, trainload and unit train relate to the volume and type of individual shipments, whereas annual volume relates to the total volume of all shipments received during a stipulated 12-month period.[19] There are many varieties of each of the per-shipment volume rates, particularly unit-train rates, and they continue to grow in number. Still wider variations are obtained by attaching annual volume conditions to the per-shipment conditions of single-car, multiple-car, trainload, or unit-train service.

There is no indication that there has ever been any misunderstanding of such basic terms as single car (carload) and multiple car which describe services that have been used for many years and which differ only in terms of quantity. Nor should there be any serious question about use of the term trainload to describe a service that is essentially multiple-car service in trainload volumes. However, there has been considerable uncertainty about use of the term "unit train." Like trainload service, unit-train service involves the movement of trainload volumes (generally larger than in trainload service), but it also incorporates several distinctive operational requirements, the most basic of which is the repeated movement of dedicated cars as a single unit. This highly efficient type of volume service has developed within the past decade and is still evolving. Because it involves the movements of trainload volumes of coal it has sometimes been confused with conventional trainload service.

The Coordinator's concern about this confusion of terms appears to stem from *Bituminous Coal, Within Eastern District,* 346 I.C.C. 590, which grew out of railroad efforts to give effect to our order in Ex Parte No. 281; that order approved a maximum increase of 20 cents per net ton on movements of bituminous coal in the East, but it limited to 15 cents per net ton the increase on "unit-train movements."[20] In *Bituminous Coal, supra,* three protestants who shipped coal under tariffs denoted as "trainload" tariffs had contended that their shipments moved in "unit-train" service and the increase on such shipments should have been made subject to a 15-cents holddown instead of the 20-cents holddown that had been applied; the carriers were of a contrary view. The Commission agreed with the carriers, removing any question those protestants may have had as to whether their shipments moved in trainload or unit-train service. The division referred to our general description of certain unit-train service in Ex Parte No. 281 in concluding that protestants' shipments did not move in such service, but did not attempt to define unit-train service as a class of service.

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[18] Such rates are among those for which definitions would be established under the recommended finding.

[19] Some volume rates based on receipts during a period of time less than a year or more than a year are sometimes spuriously referred to as annual volume rates. A more precise label to describe all such rates, including those based on receipts during a full year, would be time-volume rates.

[20] We note in retrospect that had we described the service singled out for a 15 cents holddown in terms of tariff requirements or operating characteristics rather than on the basis of carrier terminology, there would have been no room for questioning our intentions in Ex Parte No. 281.

Until there is a clear recognition of all the essential ingredients of unit train service, unqualified use of the term "unit-train" to describe a class of service should be avoided to insure against misunderstanding. Thus, in *Assigned Cars for Bituminous Coal Mines,* 350 I.C.C. 455 (decided July 22, 1975), we found it necessary to deny a widely supported request for a blanket exemption for cars in unit-train service from the provisions of the *Assigned Cars* rule, because the practical effect of such an exemption would necessarily depend upon the individual carrier's own interpretation of the term "unit train."

Some carriers actually provide unit-train service, informally refer to it as such, and yet do not so identify it in their tariffs.[21] Usage of the term also varies from commodity to commodity. Thus, Service Order No. 1186 defines coal unit-train service as:

> ***the movement of a single shipment of coal of not less than 1,700 tons tendered to one carrier on one bill of lading at one origin or concentration point on one day and destined to one consignee at one plant at one destination via one route ***;

whereas Service Order No. 1120 defines grain unit-trains as:

> trains of fifty (50) or more covered hoppers organized and operated as a unit from a single point of origin, in-transit loading point, or concentration point and consigned to one destination or distribution point in order to comply with published tariff requirements.

A comparative reading of the above definitions reveals significant differences as to per-shipment minimums, number of shipments, number of consignees, et cetera. Although such differences seem to call for more standardized terminology, they also make unmistakeably clear that in order to embrace unit-train service as a class any definition must be very broad—so broad that it would still require qualification in order to give effect to the purposes of the particular tariff or service order.

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[21] To illustrate, N&W Freight Tariff 1056, ICC 10376, publishing export-import rates on grain, is denoted as a "multiple car" tariff, but employs the term "trainload" in referring to shipments that are more commonly referred to and denoted by other carriers as unit trains; the term "unit train" does not appear in the tariff.

In view of the fact that there appears to be no significant misunderstanding of volume rate terminology except possibly the term unit-train service, coupled with the fact that any definition of such service must be very broad to permit adaptation to a wide variety of transportation circumstances and conditions, there appears to be no need to establish a separate proceeding to define such volume rate terminology. The carriers have developed the service and the terminology to go with it and it is their obligation to publish tariff schedules that can be clearly understood. This includes the duty to insure that those tariff schedules are uniformly applied.

We, therefore, find that there is no need at this time to institute another rule making proceeding to define volume rate and service terminology, but that there is a need for the carriers to develop a more uniform terminology in tariffs and other publications, to take steps to insure that unit train, trainload, and other volume operations coincide with such terminology and to comply with all provisions of the applicable volume tariffs.

The carriers are expected to promptly initiate action to accomplish the above and to keep the Commission currently informed of their progress. Accordingly, the carriers are required to file a report on this matter within 6 months after the date of service. Should a need for further information or action appear, the Commission will so direct.

Coordinator's Ultimate Finding No. 3

That the impact of general freight rate increases applied to the transportation of coal has not been self-defeating but has been necessary in generating additional revenue to pay for increased labor costs and higher prices of materials and supplies.

Background summary.—The Coordinator's report provides data which establishes that between 1966 and 1972 rail coal orginations increased from 367 million tons to 371 million tons and the percentage of coal traffic to total traffic increased from 25.38 to 25.64 percent. During this time the average rail freight rate on coal increased from $3.01 to $3.71 per ton, the average mine value of coal increased from $4.54 to $7.53 per ton, and the destination value of coal increased from $7.55 to $11.20 per ton. There were serious declines in rail coal tonnage to east coast utility plants, but they were generally attributable either to ecological considerations or to low cost import residual fuel oil.

Exceptions and replies.—C.C.I. and T.V.A. except to the ultimate finding and to the conclusion at page 334 that the general increases on coal have not been self defeating, contending that no evidence is cited or reason given to justify such a conclusion.

They also except to the statement at page 334 that the general increases in coal rates "did not cause any significant diversion of coal traffic from the rails to other forms of transportation, nor did it result in any material displacement of coal by other energy sources", contending merely that "the facts are to the contrary."

Further exception is taken to the following pargaraph appearing at pages 335-336:

> During the period from 1967 to 1972, the only significant market in which rail transportation of bituminous coal declined was east coast utility destinations. This decline, however, was attributable either to ecological considerations or to the availability of residual fuel oil at prices so low that coal was eliminated as a competitive factor without regard to rail rate levels. As an example, beginning in February, 1967, Public Service Electric & Gas Company, New Jersey's largest utility, converted about half of its electric generating capacity from coal to fuel oil. At the time of these conversions, Public Service had the benefit of trainload rates which were only 90 to 93 percent of the rates in effect ten years eariler, i.e., February, 1957. Public Service's 1969 annual report makes it clear that the conversion was due to air quality consideration rather than rail rate levels.

These utilities assert that Public Service could have met the air quality standards by installing electrostatic precipitators, but did not do so because of the higher level of rail rates and the poor quality of rail service. They rely on the following statement appearing in Public Service's annual report:

> "In 1969 the Company initiated steps to convert Bergen Generating Station from coal firing to low-sulfur oil. This represented another major effort by Public Service toward the elimination of air pollution."

to support their contention that the Coordinator erred in stating that "the conversion was due to air quality considerations rather than oil."

Discussion.—The assertion that there is no evidence to support the ultimate and subsidiary findings that increases in coal rates have not been self-defeating is wholly without merit. It flies in the face of facts of record which clearly establish that during the time the rate increases were being applied railroad coal traffic was increasing both in volume and in proportion to other rail traffic. Even if the average freight rate had remained at the 1966 level, the destination value of coal would still have risen an additional $2.99 per ton during the following 6 years. And even if the utilities had shifted from coal solely because of its increased delivered cost, it would be completely unreasonable to conclude that high freight rates were primarily responsible for the shift in fuels when they constituted but 14.2 percent of the amount of the increase.[22]

In excepting to statements of the Coordinator that any significant diversion of coal traffic from the railroads was due to air quality standards rather than to rail rate levels, C.C.I. and T.V.A. contend that the facts are to the contrary yet they fail to cite a single fact in support of their contention. On the other hand, uncontested evidence of record indicates that strong public support for stringest air quality standards was primarily responsible for driving coal out of most of the major east coast utility markets—at a cost of 45 million tons of production. Even the excerpt from Public Service's 1969 annual report offered by these exceptants reinforces the conclusion that the elimination of air pollution rather than freight rates, was the reason for converting its Bergen station from coal to low-sulfur fuel oil. Had there been the slightest element of cost savings, i.e., the avoidance of high freight rates on coal, in the decision to convert, it is highly unlikely that in an annual financial report Public Service's management would have failed to call such fact to the attention of its stockholders. C.C.I. refers to no evidence either on or beyond the record to support its assertion that Public Service, which is not a party to this proceeding, because of the high level of freight rates, converted one plant from coal to oil rather than to install electrostatic precipitators. Furthermore, the fact that Public Service may have actually installed such precipitators at another plant merely supports the conclusion that increases in freight rates were not in fact any deterrent to the continued use of coal. We agree with the Coordinator that freight rate increases have been necessary for the purpose of generating revenues for increased labor costs and higher prices of materials and supplies and to return profits in the aggregate.

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[22] Based on 1974 data, freight rates constituted but 8.2 percent of the increase in delivered coal costs since 1966.

Coordinator's Ultimate Finding No. 4

That the application of general increases authorized by the Commission has not caused any substantial distortions in the freight rate structure but some distortions in the freight rate structure exist which have evolved apart from general freight increases and which have been amplified by such general increases.

Background summary.—The Coordinator's report discusses various categories of disparities and distortions related to the application or nonapplication of general rate increases beginning with Ex Parte No. 256 and continuing through Ex Parte No. 295.

Differentials between rate groups are shown to have gradually widened as the general increases have been applied, but the percentage which they bear to the through rate has decreased. There is no evidence that changed differentials have affected the movement of traffic; moreover the dramatic increase in tonnage moving under individually tailored volume rates has further reduced the significance of widened origin rate group differentials.

The report calls attention to reductions during 1962-1964 applicable on steam coal movements in the East brought about by the competition of other fuels and modes of transportation or transmission, indicating that the cogency of these justifications has been significantly reduced by the recent upsurge in demand for steam coal.

Differences in the volume rates applicable on steam coal and those applicable on metallurgical coal have also widened as a result of application of the percentage increases. However, the percentages by which the rates differ have slightly declined.

Other disparities or distortions result from the delay in approval of general increases on intrastate traffic or from the carrier's own decision to apply less than the fully authorized increase on certain movements—whether because of competition, the existence of a previously negotiated escalation agreement, or for some other reason.

Finally, the report lists rates on several individual movements of varying distances within Southern territory, calls attention to disparities related to the wide areas covered by origin and destination groupings, notes that the growing movement of coal at volume rates disregards differential structures, and recommends that the railroads consider revising their origin and destination groupings.

Exceptions and replies.—C.C.I and T.V.A. except generally to this ultimate finding as erroneous, arbitrary, capricious, without rational basis, and not supported by probative evidence, but specifically object to the following statement at page 339:

> One distortion which has developed in the rates on bituminous coal in the East arose from the reductions in the rates on bituminous steam coal in the years 1962 through 1964. Those reductions were occasioned by the competitive conditions affecting the movement of that coal involving commodity competition of coal with natural gas and imported fuel oil, transportation competition with projected pipelines, and competition with minemouth generating plants and high capacity transmission lines.[23]

They contend that characterization of the 1962-1964 adjustments as "reductions" which created a "distortion" in rates on eastern bituminous steam coal was misleading, that such a conclusion is not supported by cost testimony on which the report relies, and that the trainload and unit-train rates referred to were not reductions but new rates for a new service which are at a higher level in relation to costs than the single-car rates whose use they replaced.

Bethlehem Steel specifically excepts to the report's failure to deal with disparities in rates on metallurgical coal and those on steam coal, particularly those disparities resulting from the application of the general increase authorizations. Bethlehem contends that the following statement(s) in the report constitute a recognition of distortions between rates on steam and metallurgical coal and provide a basis for corrective action in this or a separate proceeding:

> One distortion which has developed in the rates on bituminous coal in the East arose from the reductions in the rates on coal in the years 1962 through 1964***. (P. 339.)
>
> and
>
> [The] initial differences in the rates on steam and metallurgical coal have been increased by the application of percentage increases. (P. 340.)

Bethlehem also excepts to the conclusion at page 372 of the report:

> That the application of general increases authorized by the Commission has not caused any substantial distortions in the freight rate structure, but that some distortions in the freight rate structure exist which have evolved apart from general increases and which have been amplified by such general increases.

stressing that the general increases authorized by the Commission have broadened the differences between rates on metallurgical coal and steam coal to the point that those differences now constitute 10 percent of the steam coal rates, a degree of difference that amounts to a substantial distortion (table 86, p. 340). Bethlehem further asserts that rates which rest on a difference in use are unreasonable and unlawful.

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[23] The balance of the quoted paragraph to which no objection is raised, states: "However, a recent upsurge in the demand for steam coal in the East has significantly reduced the cogency of these justifications."

In reply to Bethlehem the Western railroads assert that steam coal rates may be lower than metallurgical coal rates in the East, but that the opposite is true in the Midwest (I&ICC territory) which many Western lines serve. They contend that competition is the effective regulator of coal rates and that a further proceeding on issues raised by Bethlehem is unnecessary.

Discussion.—Because this discussion relates to both disparities and distortions, it is appropriate at the outset to clarify use of those terms. "The Webster Third International Dictionary" defines *disparity* as "a marked difference (as in quality or kind); dissimilarity"; it defines *distortion* as "a twisting out of a natural, normal or original shape, form or condition." We use the terms in that sense.

The excepting utilities assert that the trainload rates of the early 1960's covered a new type of transportation service and are, therefore, not reductions in rates. Although technically correct in that regard, the exceptants completely avoid discussion of the more significant aspect of the Coordinator's statement which makes clear that these new rates resulted in reductions in freight charges paid by the electric utility companies and that whatever the competitive needs may have been at the time of publication, their cogency has been significantly affected by the explosive upsurge in demand for coal as well as by restrictive air quality standards.

We also agree that the new rates did not "distort" the existing rate structure. Inasmuch the services and requirements under the volume and single-car rates are markedly different, publication of the new volume rates on steam coal created not a "distortion" but a "disparity" in the rate structure. We consider such differences to be justified by the circumstances and conditions attending the particular transportation services. *Coal to New York Harbor Area,* 311 I.C.C. 355 (1960).

We note also that subsequent to establishment of the trainload rates on steam coal, trainload and unit-train rates were established on metallurgical coal tailored to the particular transportation circumstances and conditions surrounding the movement of that coal. The publication of such rates also created a disparity in the conventional coal rate structure. However, Bethlehem's exceptions are directed at disparities in volume rates applicable on steam coal and those applicable on metallurgical coal. They focus particularly on the magnification of rate differences, which, as shown in table 86, is brought about by the fact that, due to their lower level the rates on steam coal have been increased by lesser actual amounts than those on metallurgical coal. We agree with Bethlehem that this proceeding is broad enough for us to consider such matters.

While it is true that the rate differences have increased in actual amounts, the percentages which the rate differences bear to the rates themselves have slightly declined. Moreover, the volume rates on metallurgical coal and steam coal set forth in Bethlehem's example were not established upon the basis of any relationship to each other, but were established upon a relationship to the applicable carload rates. No evidence is presented as to changes in any relationships with respect to carload rates, nor is any attempt made to establish any similarity as to the volume, detention or other conditions of the compared rates. And finally, there is no evidence that the widening of the differences between the two sets of volume rates has in any way affected the movement of metallurgical coal traffic. In fact, none of the other steel companies who are party to this proceeding have ever raised a question about rate disparities. Perhaps they recognize that in some areas the rate on metallurgical coal are in fact lower than the rates on steam coal.

Although we find that rate disparities related to different levels and categories of volume rates applicable on metallurgical coal and steam coal have been magnified by general rate increases, we do not believe it warrants corrective action in this or related proceedings at this time. This of course does not rule out or affect the right of Bethlehem to initiate complaint action directed to particular rate and tariff matters which it contends to be unlawful. In addition, the fact that disparities among rates on coal are shown to be gradually widening as percentage rate increases are applied is a factor to be considered with regard to future rate adjustments. The rules under consideration in Ex Parte No. 290, *Procedures Governing Rail Carrier Increase Proceedings*, could provide the means to address this situation.

Coordinator's Ultimate Finding No. 5

That the impact of general freight increases on coal has had an uneven effect in meeting the revenue requirements of individual railroads.

Background summary.—Beyond recognizing the clearly established fact that the general increases have had uneven effects upon individual carriers, the Coordinator forthrightly identifies the major cause—the dramatic impact of the establishment of local and national air quality standards during the 1966-1972 period. The abrupt imposition of rigorous local standards resulted in the loss of substantial tonnages of coal traffic by individual eastern carriers serving areas of predominantly high sulfur coal production, and in the gain of substantial tonnages of coal traffic by individual southern and western carriers serving areas of predominantly low sulfur coal production. The application of general increases to reduced or increased proportions of total coal traffic produced in turn, uneven revenue effects upon individual roads and upon their ability to meet their revenue requirements.(Because of the predominance of coal in the traffic consist of some individual roads the loss of coal traffic was a factor significantly contributing to their insolvency during this period.) These uneven effects were modified to the extent that individual carriers elected to apply less than the full measure of the increases authorized.

Exceptions.—Although no objection is made to this ultimate finding, C.C.I. does except to a subsidiary finding at page 352 that "These uneven effects do not appear to be related to general rate increases, but rather they appear to be due to factors largely beyond the control of the carriers and the Commission."

Discussion.—C.C.I. contends that these uneven effects are largely due to factors within the Commission's control, referring to several areas of possible Commission action or policy. However, they offer no explanation as to how or to what degree, if any, such factors may have brought about uneven effects upon individual carriers. Moreover, C.C.I. does not seek to respond to the Coordinator's explanation for not seeking to ascribe "uneven effects" to general rate increases that is, that such an exercise would be of little significance in light of the far greater impact on individual carriers of radically changing market conditions related to air quality standards. Because the condition of the coal market is a subject upon which C.C.I. was in a position to provide firsthand information, it can only be assumed that its failure to respond indicates its assent to the Coordinator's explanation.

Nevertheless, while we cannot accept C.C.I.'s basic contention, we do recognize a minor inconsistency between the statement at page 352 that the uneven effects on individual carriers "do not appear to be related to general rates increases" and the ultimate finding that the impact of general rate increases "has had an uneven effect in meeting the revenue requirements of individual railroads." However, in view of the facts of record and the Coordinator's stress upon changing market conditions, it is obvious that whatever the relationship of uneven effects to general rate increases may be, such relationship does not appear to be of particular significance.

Coordinator's Ultimate Finding No. 6

That the general freight increases sought by the railroads and authorized by the Commission have for the most part been for the purpose of offsetting higher prices of materials and supplies and increased wage costs; under present conditions increased rates on coal, standing alone, will not furnish sufficient inducement for carriers to purchase all of the coal cars and locomotive units to meet reasonable demands for the next 5 years.

Background summary.—Essential facts and findings of record indicate that recent past general increases have primarily been designed to partially offset increased railroad expenses and material costs; that during the period of such increases carriers have not increased overall coal car ownership but rather have permitted the size and capacity of the open-top hopper car fleet to steadily decline; and that this trend is continuing despite an unprecedented and unanticipated surge in demand for coal as a fuel. To satisfy that demand conservative forecasts indicate that coal production must increase from 644 million tons in 1974 to 839 million tons in 1980 while rail coal originations must increase from 406 million tons in 1974 to 548 million tons in 1980. An estimated total investment in rolling stock of $3.06 billion in constant 1974 dollars and $3.59 billion in current dollars will be required in order to meet such increased demand.

Although there is little uncertainty as to the projected overall demand for coal, there is—because of conflicting and unresolved views on air quality standards and surface mining regulations—considerable uncertainty as to just where, geographically, most of such new production needed by 1980 will take place.[24] This uncertainty has been a deterring factor in capital expansion plans of the coal industry. It has also deterred capital expansion plans of individual railroads and there is no present indication that its dampening influence will soon be removed.[25]

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[24] "Coal operators are, and understandably will be, cautious about investing huge amounts of capital to develop new mines until reasonably assured that they will be permitted to mine the particular coal field as planned and that the coal itself is of such quality that it may be marketed over the life-span of the investment.

In order for the railroads to fund and build the additional equipment required for coal transportation by 1980, they must give priority to generating enough revenue from rates on coal. However, in view of the implicit failure of general increases to induce carriers to increase car fleets in the recent past and of the varying financial resources of individual coal roads, there is some question as to whether the railroads as a group have the financial resources necessary to begin now to construct and acquire the needed rolling stock without some assurance that it will be fully used over its service life. The Coordinator indicated that the Federal Government can provide such assurance "in the form of low cost loans or by other means, including perhaps the purchase of cars by a semi-private government corporation."

Exceptions.—C.C.I. excepts to the finding that coal rates do not furnish sufficient inducement for carriers to purchase coal cars and locomotives needed to support reasonable demands for the next 5 years. The utilities argue that the ultimate finding is not supported by any subsidiary findings or facts of record; that even the cost data of record shows that coal contributes $1.19 a ton above variable cost which, based upon the projected increase in rail coal demand (540 million tons by 1980), would produce $652 million annually—enough to amortize and pay carrying charges on the necessary investment ($3.06 billion) and leave $364 million available for other capital investment or dividends. C.C.I. further states that acquisition of rolling stock is no problem for roads such as the C&O, N&W, and Southern, but that no increase in coal rates for bankrupt roads such as Penn Central would produce any additions in equipment.

The Armoc-Inland-Republic group of steel producers do not except to the ultimate finding, but specifically except to the italicized portion of the following statement appearing at page 366 of the report:

> *** the Federal Government in the form of low cost loans or by other means, *including perhaps the purchase of cars by a semi-private government corporation* can assure railroad management and the general public of a truly national commitment which will make investment in coal cars attractive ***

contending that such italicized suggestion is unwarranted because it goes beyond the issues embraced by this proceeding and is not supported by substantive and probative evidence of record.

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[25] The threat of coal slurry pipelines adds an additional element of uncertainty.

Discussion.—The Coordinator, giving recognition to the immensity and complexity of the energy problem facing our nation, has realistically suggested that the Federal Government—whose national energy and environmental goals have had and will continue to have a major impact on the transportation of coal—take necessary steps to stimulate construction of coal cars, rather than to depend solely upon the carriers' utilization of revenues from coal freight rates to expand the overall car fleet. As the Coordinator explained, before rail management can reasonably be expected to authorize the purchase of literally thousands of new coal cars and hundreds of new locomotives, assurances must be given that this investment will be fully utilized over its service life. Notwithstanding that explanation and the Coordinator's prior finding that the overall rates are compensatory, C.C.I. views such present finding as an implication of coal's unprofitability.

C.C.I. completely misses the mark by failing to even consider the "present conditions" referred to in the ultimate finding—conditions that render meaningless a purely mathematical approach to the highly complex problem of anticipating and providing for 5 years in advance the car service requirements of an industry that does not yet know whether important sources of its product can be utilized under present public policies.[26]

C.C.I. also completely disregards the facts of record which clearly establish that notwithstanding general increases both in coal production and in freight rates on coal during the past decade or more, the overall open-top hopper car fleet continues to decline. If increased freight rates have not induced the carriers to expand their overall coal car fleet in the recent past there is no reason to assume that they can be counted on to do so in the immediate inflation-bent future.

The position of C.C.I. also fails to recognize the policy of the Commission favoring expansion and preservation of the existing fleet of freight cars by means in addition to revenues from freight rates. See *Distribution of Privately Owned Freight Cars*, 346 I.C.C. 278, and *Assigned Cars for Bituminous Coal Mines*, 346 I.C.C. 327, and 350 I.C.C. 455, in which we specifically protect the right of shippers to fully utilize their own equipment during times of car shortage in order to encourage expansion of the overall car fleet. The growing use of private cars by shippers, including some of the exceptants, gives further recognition to the need to increase the capacity of the overall coal car fleet by means other than by revenues from freight rates.

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[26] Much of the steam coal produced in the deep mines of the Northeast and Midwest is of high sulfur content and under air quality standards cannot be burned without use of emission reduction equipment, whereas practically all of the coal produced in the massive strip operations of the West (and also, to a lesser extent, the East) is of low sulfur content and poses no problem in meeting air quality standards. This situation has fostered a dramatic rise in strip mining and a geographic shift in sources of new supply. However, such situation could be altered by enactment of legislation imposing stringent controls on strip mining. Additionally, the relaxation of sulfur emission standards while desulfurization technology is perfected would significantly slow the expansion rate of strip mining. Under such present uncertain conditions coal operators are understandably cautious about investing their capital in costly new mines—especially deep mines—without some financial incentive or assurance that they will be able to profitably mine and market the coal involved.

In view of the foregoing we do not consider it necessary to comment on C.C.I.'s financial calculations beyond pointing out that they are erroneously based on tonnage and earnings expected for 1980 rather than on tonnage and earnings for the immediate future when construction of the urgently needed coal cars must begin.

The Armco-Inland-Republic group of steel producers explains that its opposition to our suggestion relative to Federal participation in the purchase of freight cars stems from its opposition to the basic concept of a national freight car corporation which, it asserts will make possible Government intrusion into the management and allocation of such equipment. These exceptants share the Coordinator's conviction that there must be a national commitment to make investment in coal cars attractive, but strongly advocate private, rather than Government, ownership of railroad freight cars for the movement of coal.

The perilous financial condition of the Nation's railroads needs no documentation. Aware of the necessity for Government aid, Congress has considered four basic legislative approaches toward funneling capital into the ailing railroad industry: Government ownership of the roadbeds, trust funds, guaranteed loans, and guaranteed wages. Although we have indicated our support of guaranteed loans we are convinced that vastly more substantial efforts must be made to prevent the physical plant of many railroads from simply falling apart.[27] The Coordinator's statement that the Federal Goverment might participate in the purchase of coal cars springs from his deep concern over the financial and physical state of the rail industry and is but a recognition of the need for a vastly more substantial commitment now than at any time in the past. It does not necessarily indicate support of the specific form such national commitment should take. However, we agree with the steel company exceptants that the merits of a national freight car corporation go beyond the issues of this proceeding. We intend to focus more sharply on the railroad problems and the need for responsive Federal action than on the particular form such action should take. Accordingly, we find that the Federal Government can and should assure railroad management and the general public of a truly national commitment which will make investment in coal cars attractive. In this regard, some form of government financial assistance might appropriately be considered. However, such a finding presupposes that the Federal Government takes whatever action is needed to make investment in major coal production facilities attractive,[28] for until the coal is produced it cannot be transported.

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[27] For example, we recently supported bills that would set up public works programs to rehabilitate rail lines by putting unemployed person to work on such projects. Additionally, we recognize the need to coordinate any rolling stock loan program with the railroads' improved rolling stock information system so that it may be geared to identified needs. We also contemplate that such carrier-supplied information will be augmented by cost and revenue data from the data bank recommended in Ultimate Finding No. 10.

Coordinator's Ultimate Finding No. 7

That a need exists for the determination of maximum or minimum, or maximum and minimum, reasonable rates for movements of bituminous coal and lignite from Bituminous Coal Producing District Nos. 16 through 22, except from points in the State of California, to all points in the United States east of the Rocky Mountains; that a formal investigation separate and apart from Ex Parte No. 270 be entered into by the Commission for the purpose of determining maximum and/or minimum scales of rates, including the setting of oral hearings in the Rocky Mountain-Upper Missouri River region; that an appropriate environmental impact statement be timely issued in connection therewith.

Background summary.—Of the Nation's 23 coal producing districts, 11 are located west of the Mississippi River and grouped into the following ratemaking regions: Great Plains-Southwestern region (producing districts numbered 12, 14, and 15); West Coast region (producing district number 23); and Rocky Mountain-Upper Missouri region (producing districts numbered 16 through 22). See map 3, page 119 of report.

Because of the huge deposits of low sulfur coal in the Rocky Mountain-Upper Missouri River area that region has become increasingly important in meeting the Nation's energy needs; the demand for such coal is already intense and will become even more intense in the future. Unlike the East and South, this area of the West is without a full line of commodity coal rates. In consideration of the rapidly growing importance of the Rocky Mountain-Upper Missouri River region,[29] the Coordinator concluded that the rate structure in districts numbered 16 through 22 required guidelines as to zone of reasonableness (the prescription of particular rates was also included) and recommended the institution of a separate formal proceeding for that purpose. Referring to overall comparisons of class and commodity rates made elsewhere in the report, he suggested use of the class rate or similar distance scale as a basis for the investigation and an appropriate environmental impact statement.

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[28] As set forth in the Coordinator's report, there is an apparent conflict of national energy, environmental and economic goals which operates as a deterrent to coal production. Certainly those goals need to be more clearly defined and brought into harmony with one another.

Inasmuch as districts making up the Great Plains-Southwestern and West Coast regions produced in 1972 less than 17 million tons of bituminous coal[30] much of which moved in intrastate commerce, the Coordinator recommended that they not be included in the investigation.

The Coordinator found that from a cost standpoint the rates on lignite—produced principally in district number 21—were compensatory and not unreasonably high, but nevertheless included them in the recommended investigation.

Exceptions and replies.—C.C.I. and T.V.A. maintain that this finding is based in major part on revenue/cost relationships and the reasonableness of rates on coal which were not identified as an issue in the instituting order. These arguments are disposed of in our discussion of ultimate finding No. 1 and will not be further considered here.

The Western railroads contend that there is no evidence indicating a need to determine maximum and/or minimum rates on western coal or to institute a formal investigation apart from Ex Parte. No. 270 for that purpose. Intimating that the Coordinator based his finding on the Old West Regional Commission's statement that there should be a coal rate structure to promote use of coal within the Old West area, they state that there is nothing in the record to indicate that present rate levels will not accomplish that purpose or that Old West has ever worked with the western roads to develop such rate levels. They contend that rates have been made at a level which enables western coal traffic to move freely and adequately compensates the carriers, stressing that rates on western coal must be competitive on an origin basis and also meet the competition from midwestern and eastern, as well as an increasing amount of import coal. The levels of present rates in the West reflect competition from oil, natural gas, and water. The carriers further contend that our national energy requirements are dependent upon coal as an available resource throughout the country and not just in the West. Finally, they assert that there is no need for a general coal rate structure in the West because the traffic patterns that have developed in the East and South are considerably different from those in the West.

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[29] The importance of this area as a major source of low sulfur coal and the need for freight rates to encourage use of that coal for reasonable economic development within that area was stressed by the Old West Regional Commission which represents the Upper Missouri River region. Other regional commissions did not participate in the proceeding.

[30] Coal producing states west of the Mississippi that would not be included in the proposed investigation are Iowa, Arkansas, Oklahoma, Missouri, Kansas, Texas, Oregon, Idaho, and Washington. Those that would be included are Colorado, Arizona, New Mexico, Wyoming, Utah, North Dakota, and Montana.

In reply Old West Regional Commission notes that it did not seek formal prescription of a rate structure on western coal, but rather the development of policy guidelines for a rate structure that would lead to reasonable economic development in the Old West States[31] while according to rail management a reasonable degree of flexibility and initiative. It contends that the scope of the recommended proceeding is sufficiently broad to permit inquiry into such matters. Old West calls attention to the railroads' failure to argue the environmental issue, refers to legislation[32] setting up a program for the conversion of certain utility plants to coal as a principal fuel, alleges that a draft environmental statement must be prepared prior to hearing, and reemphasizes its position that only as part of an environmental assessment can its views on economic development be considered in their proper economic, transportation, and social perspectives. The regional agency also indicates that economic and legal arguments of record provide ample justification for a separate investigation, restating some of its prior assertions, including the contention that the subject of rail rates on coal is one of the most critical and volatile matters facing the Nation and should be considered before attitudes and rate structures become narrowly locked into place. It requests us to direct participation of the Special Projects Office in the recommended investigation.

Discussion.—The unprecedented demand for western low sulfur coal and the probability of its widespread extraction raises problems of great magnitude that require a truly national effort in order to formulate solutions. The mining of western low sulfur coal in a manner ultimately found to meet environmental standards will not aid the Nation in its endeavor to become energy independent if the coal is not transported from origin to destination. Without the assurance of efficient transportation there will be no development of these coal reserves. This aspect of interstate commerce of western coal requires that the Commission, having jurisdiction over the construction of lines of railroad to serve new mines and the rates to be assessed over new and old lines of railroad, must devote its attention to the transportation of coal with a view toward formulating a rational program either in the form of specific rates, rate levels or guidelines.

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[31] States included in the Old West Regional Commission are Montana, Nebraska, North Dakota, South Dakota, and Wyoming (Producing District Nos. 19, 21, and 22).

[32] The Energy Supply and Environmental Coordination Act (ESECA) P.L. 93-319 15 USC 791. The coal conversion provisions of this act were extended and are expected to be extended again.

The major coal rate structures of the East involve single car rates made on a group and differential basis. These structures, often predating the act, grew out of overproduction and intense competition within the coal and railroad industries. They were designed to reduce destructive competition and to provide a measure of market stability.[33] Apparently the rate structures that existed prior to regulation as further modified by a series of Commission decisions have served their purpose well, for as the Coordinator notes, there have been few complaints by coal shippers, receivers, and localities against the coal rate structure in more recent years. However, as the Coordinator further notes, such structures are now of declining importance in the marketing of coal and by 1980 more than 85 percent of domestic tonnage will move under individually tailored volume rates, established on the basis of circumstances and conditions surrounding each particular movement and bearing no relationship to conventional rate structures. Thus, despite the existence of a full line of single-car commodity rates in the East,[34] less than 15 percent of the domestic tonnage is expected to move under such rates. In such a situation it is not particularly significant that there may be a much more extensive coverage of carload commodity rates in the East than in the West. However, there are other factors warranting a distinction between the East and West.

As the Coordinator pointed out in his report, carriers in the West, particularly the Rocky Mountain-Upper Missouri River region, are subject to considerably less water competition than are carriers in the East.[35] Although some western coal moves over Great Lakes and Mississippi River docks, it does so only on interterritorial movements; such fact clearly permits no assumption that transportation conditions in the East and West are similar.[36]

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[33] Evidence introduced by the Special Projects Counsel indicates that this tendency to overproduction caused the railroads to "get together, compare their differences, and agree on a fair division of tonnage among regions," citing Lambie, *From Mine to Market*, page 81.

[34] New rates continue to be established where needed and old rates continue in increasing numbers to be cancelled as obsolete.

Another significant matter meriting attention is the growing interest in the proposed construction of pipelines to transport coal in slurry form.[37] Although the claimed economies for transportation via such mode are in sharp dispute, it is generally recognized that maximum benefits are obtained by the movement of large volumes of coal for long distances. Therefore, in view of the fact that mines are larger and hauls are longer in the West than in other sections of the country, the proposed construction of coal slurry pipelines constitutes a much more significant threat to western than to eastern roads.

It is apparent from the above that intermodal competition significantly differs in both degree and kind, as between coal carriers in the West and those in the East. Additionally, as the western lines point out in their exceptions, traffic patterns that have been established in the East (north and south) are considerably different from those in the West. The limited number of mines, the large capacity of the mines, and the limited number of receivers are salient distinctions between West and other territories. However, of even greater importance is a consideration of the impact upon the region's freight rate structure of the unprecedented demand for western low sulfur coal.

The Coordinator's report establishes that based upon the most conservative of estimates, rail originations between 1974 and 1980 will increase by 19 percent in the case of eastern coal, but will increase by 108 percent in the case of western coal.[38] Almost all of the increase in western coal originations will take place in producing districts numbered 16 through 22. Although the Commission has developed guidelines for rate reasonableness through a large body of coal rate cases spanning the history of the act, very few of those cases relate to western coal. Moreover, the western carriers have at no time in the past been faced with a surge in demand for coal transportation that approximates that forecast for the Rocky Mountain-Upper Missouri River region.

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[35] The fact that many eastern mines are landlocked and served only via rail does not alter the fact that many eastern mines are also located near navigable rivers.

[36] Many rail shipments of eastern coal are dumped into westbound vessels that have just discharged cargoes of iron ore, but shipments of western lake cargo coal are dumped into eastbound vessels not engaged in the eastern ore trade.

[37] Slurry is the technical term used to describe the movement of large masses of coal by pipeline after it has been ground up and mixed with water. Hearings have been held during the present Congress on bills to grant the right of eminent domain to pipeline companies for the transportation of coal.

[38] Bureau of Mines forecasts indicate that rail coal originations will increase from 72,920,000 tons to 151,706,000 tons in the West and from 332,790,000 tons to 396,216,000 tons in the East. Most of the increase in western tonnage will move to markets in the West, according to a study recently released by the Federal Energy Administration which predicts that coal demand through 1980 will increase by 29 million tons in the East and by 120 million tons in the West. Nuclear fuel is expected to provide much of the growth in energy capacity in the East and low sulfur coal is being substituted for oil and gas in the West where dependence on those fuels has been large.

In view of all the foregoing we do not consider that the revenue/cost comparisons developed herein for movements of bituminous coal from all origins west of the Mississippi River will necessarily be representative—whether on the basis of volume, distance, economic, market or other considerations—of the vastly increased movement of bituminous coal expected to take place in the relatively near future from origins in producing districts 16 through 22. We, therefore, consider it desirable to develop further guidelines of reasonableness in connection with present and prospective rates from those districts.

Although present rates on lignite appear to be compensatory and not unreasonably high from a cost viewpoint, they should be included in any consideration of guidelines of reasonableness in connection with rates on western low sulfur coal, because lignite is shipped from the same general region[39] and, by virtue of its low sulfur content, also possesses unusually high demand characteristics.

We afirm the Coordinator's finding to the effect that the rate structures on bituminous coal and lignite in Bituminous Coal Producing Districts Nos. 16 through 22 except from points in the State of California, to all points in the United States east of the Rocky Mountains are in need of guidelines as to the zone of reasonableness. Pursuant to that need we will institute a formal investigation to study the transportation and potential transportation of bituminous coal and lignite that will include oral hearings in the Rocky Mountain-Upper River region. Environmental matters will receive appropriate consideration in that proceeding.

The investigation while broad in scope will not have as one of its intended purposes the forcing upon this transportation a rate structure that has evolved in another section of the country. Rather the investigation is being instituted in order to solicit the views of all concerned persons so that the ultimate decision will in the short and long run foster sound transportation in the public interest.

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[39] Rail shipments of lignite originate predominately in districts 20 and 21, both of which are in the Rocky Mountain-Upper Missouri River region.

Coordinator's Ultimate Finding No. 8

That a need exists for realignment of duties and responsibilities of certain bureaus and offices of the Commission in order to fulfill the Commission's duties in relation to the freight rate structure on coal, including a need for the return from the Department of Transportation of the processing of the 1-percent waybill sample.

Background summary.—In order that the work of the Suspension and Fourth Section Board may be streamlined and the public better informed as to the reasons for its decisions, the Coordinator has recommended certain changes in its operation and functional organization. Essential elements of the proposal are: the reduction of the number of members from five to three; appointment of at least one lawyer as a member; removal of the appeal function to a separate unit in the Bureau of Traffic; establishment of a cost finding unit within the Bureau; and provision for a more detailed explanation of the Board's orders.

Further, in view of the importance of the carload waybill sample to the Commission as a tool for research and analysis and the untimely and inaccurate manner in which it is presently prepared by the Department of Transportation, the Coordinator recommended that the carload waybill sample be returned for future preparation to the Commission.

Discussion.—No exceptions were filed nor any adverse comments made with respect to the above findings. We believe that the internal changes suggested by the Coordinator have merit and that some realignment is warranted. Accordingly, we intend to proceed generally in the manner outlined in his report with one exception. At this time, we see no need to establish a cost finding unit within the Bureau of Traffic. In addition, we propose to establish a special position in the Office of the Director, Bureau of Traffic, similar to that recently created in connection with the Motor Carrier Board. The creation of this position will facilitate prompt response to public inquiries on suspension matters and will serve to insulate Suspension and Fourth Section Board members and staff from potential undue outside influence.

Coordinator's Ultimate Finding No. 9

That a need exists for a perpetually open proceeding for the accumulation of a bank of data available to shippers, carriers, and the Commission, particularly for use in general revenue proceedings.

Background summary.—Recognizing that techniques for data accumulation and analysis have reached the point that it is now feasible to do so, the Coordinator recommended establishment of a computer data bank, beginning with those commodities already selected for investigation under subnumbered proceedings in Ex Parte No. 270. He further recommended that in each commodity group a small number of typical rates that move traffic be kept on a current basis and currently compared with variable costs, the class rate scale, and other economic data.[40] In order to develop such data he recommended that the Commission institute a perpetually open subnumbered proceeding in Ex Parte No. 270 under which relevant evidence and updates of the rate structures be required from each necessary party.

Exceptions and replies.—Only the western railroads take exception to the ultimate finding.[41] This group of railroads asserts that section 15(11) limits the availability of data to shippers and other carriers; that a perpetually open proceeding will lead to more litigation and disputes among shippers, carriers, third parties and the Commission, leaving controversies unresolved.

However, rather than lead to litigation and disputes the proceeding could reduce disputes to the benefit of all parties, according to the Special Projects Staff, who note that it is the Commission's responsibility to make decisions on the basis of the latest available data. SPS stresses that the high and increasing degree of importance of coal traffic to the railroads underscores the Commission's need to develop relevant and timely data upon which to base its decision in the coal area.

Discussion.—Although the western roads raise questions about the need for a perpetually open proceeding, nowhere in their exceptions do they question the need for the Commission to establish a computer data bank. This is significant, for the gathering, processing, and digesting of rate, economic and other data relative to surface transportation is one of the critically importance remaining areas for improvement of our regulatory process. It is particularly important that our decisionmaking be based on current, relevant and reliable information, especially in general increase proceedings where increasing emphasis will be placed on commodity considerations. See Notice of Proposed Rulemaking in Ex Parte No. 290, Procedures Governing Rail General Increase Proceedings.

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[40] The report does not specify the source of data that would be included, but in view of Ultimate Finding No. 8 it is apparent that much data will be gathered from the 1-percent waybill sample.

[41] Some parties except to comparisons of coal rates and the class rate scale which the Coordinator would include in the data bank, but they do not except to the ultimate finding that a need exists for an open-ended proceeding to accumulate data.

We agree with Special Projects Staff that this particular group of carriers appears to be overly apprehensive. We know of no basis for their concern and they have provided us no rationale in support of any of their bald assertions. The Commission has no intention of disclosing elicited information to the detriment of those coming under the protection of section 15(11).[42] Nor should these carriers have any real concern that the investigation will foster disputes and litigation. Understandably, shippers, carriers, third parties, and this Commission may differ as to what information should make up our data base, but all will surely agree that decisionmaking based on current, relevant, and reliable information should significantly reduce the likelihood of controversy and litigation. It is to develop reliable and relevant information and to maintain it on a current basis that the continuing proceeding has been proposed. Nothing in the Coordinator's report suggests that the Western railroads will be asked to finance the development of this information. Nevertheless, they, as well as the other railroads and shippers, will have access to it for their own use.

In view of the foregoing we consider the establishment and continuous refinement and updating of a relevant and reliable data base to be of compelling public need and we, therefore, affirm the Coordinator's ultimate finding. As necessary, appropriate orders will be entered.

Coordinator's Ultimate Finding No. 10

That this report does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969.

Background summary.—The above finding is based on an environmental assessment in which the Coordinator spelled out that this subnumbered investigation is educational in nature; that its purpose is to describe in detail the nature of the freight rate structures on coal which are both complex and baffling and to pinpoint those areas in the coal freight rate structures which may require corrective action, after according all parties their statutory rights and according them due process of law. He found that recommendations related to definitions of tariff terms, accumulation of a data bank for use in general increase proceedings, and realignment of duties and responsibilities within the Commission are matters not significantly affecting the quality of the human environment or not within the purview of the National Environmental Policy Act of 1969. He found that a recommendation to institute a proceeding to consider the justness and reasonableness of coal rates from districts numbered 16 through 22 does embrace environmental matters. We have indicated that environmental matters will be considered in that proceeding.

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[42] The purpose of section 15(11) is to immunize each shipper from disclosure of his business at the hands of a common carrier.

Discussion.—None of the parties take exception to the above recommended ultimate finding. Consequently, the same is affirmed without further discussion.

ULTIMATE FINDINGS

As set forth under our discussion relative to the various ultimate findings, we find that our report herein, like the Coordinator's report, constitutes an advisory opinion; that ultimate finding No. 1 does not constitute a finding as to individual rates; and that ultimate finding No. 2 there is no need for a separate proceeding to establish uniform tariff terminology. Accordingly, we make the following ultimate findings:

1. That the freight rate structures on coal are, with few exceptions, compensatory and not unreasonably high;
2. That there is a need for the carriers to develop a more uniform terminology in tariff and other publications, to take steps to insure that unit train, trainload, and other volume operations coincide with such terminology, and to comply with all provisions of applicable volume tariffs;
3. That the impact of general freight rate increases applied to the transportation of coal has not been self-defeating, but has been necessary in generating additional revenue to pay for increased labor costs and higher prices of materials and supplies;
4. That the application of general increases authorized by the Commission has not been the primary cause of distortions in the freight rate structure but some disparities in the freight rate structure exist which have evolved apart from general freight increases and which have been amplified by such general increases;
5. That the impact of general freight increases on coal has had an uneven effect in meeting the revenue requirements of individual railroads;
6. That the general freight increases sought by the railroads and authorized by the Commission have for the most part been for the purpose of offsetting higher prices of materials and supplies and increased wage costs; under present conditions increased rates on coal, standing alone, will not furnish sufficient inducement for carriers to purchase all of the coal cars and locomotive units to meet reasonable demands for the next 5 years;

7. That a need exists to develop guidelines as to zone of reasonableness, including the determination of maximum and/or minimum rates, for movements of bituminous coal and lignite from coal producing districts numbered 16 through 22, except from points in the State of California; that responsive to that need the Commission will institute a formal investigation, separate and apart from Ex Parte No. 270 to develop such guidelines, including the setting of oral hearings in the Rocky Mountain-Upper Missouri River region; that environmental matters will be considered in such proceeding;

8. That a need exists for realignment of duties and responsibilities of certain bureaus and offices of the Commission in order to fulfill the Commission's duties in relation to the freight rate structure on coal, including a need for the return from the Department of Transportation of the processing of the 1-percent waybill sample;

9. That a need exists for a perpetually open proceeding for the accumulation of a bank of data available to shippers, carriers, and the Commission, particularly for use in general revenue proceedings;

10. That this report does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969.

Commissioner Hardin did not participate.

It is ordered, That, subject to the requirement that carriers report as required herein relative to the development of more uniform terminology in tariff and other publications, the subnumbered proceeding, be, and it is hereby, discontinued.

Frequency distribution of rate to variable cost ratios
(PERCENTAGES)

Type of movement	Below 95	95-97	100-109	110-119	120-129	130-139	140-149	150-159	160-169	170-179	180 & over	Total
Single-car movements with no annual volume requirements	13	4	8	9	21	16	6	14	11	4	11	117
Single-car movements with annual volume requirements	4	2	2	0	0	1	2	1	0	0	0	12
Multiple-car movements with no annual volume requirements	2	0	1	6	6	7	2	4	2	1	9	40
Multiple-car movements with annual volume requirements	1	3	3	3	3	1	3	5	1	0	1	24
Trainload movements in carrier's equipment with no annual volume requirements	0	0	2	1	5	5	8	5	2	6	9	43
Trainload movements in carrier's equipment with annual volume requirements	8	0	1	4	14	5	5	7	2	1	7	54
Trainload movements in shipper's equipment with no annual volume requirements	0	*1	0	0	1	2	1	3	2	2	1	13
Trainload movements in shipper's equipment with annual volume requirements	1	1	0	5	2	3	0	1	0	0	1	15
Total—all movements	29	11	17	28	52	40 (Median)	27	40	20	14	40	318

*Improperly costed—fails to allow for shipper ownership of motive power.

ANALYSIS OF COST METHODOLOGY

in

Ex Parte 270 (Sub-No. 4)—Investigation
of Railroad Freight Rate Structure—Coal

Certain Coal Interests (C.C.I.) takes exception to a number of findings contained in the Coordinator's Report and Order of March 14, 1975. Among other contentions these interests maintain that the adjustments made in regional average costs were inadequate and distorted in that "they do not reflect the conditions under which services are actually performed on unit-train, trainload and volume movements of coal and cannot properly be used as a measure of the costs of such movements." The specific criticisms with respect to the methodology used to develop costs along with our comments are shown below.

Single Car Costs

Criticism: C.C.I. states that no adjustments were made to single-car shipments to reflect characteristics applicable to the movement of coal other than using route of movement miles and including interchange costs. C.C.I. further assert that just because coal moves under a single-car rate does not mean that the physical movement is one car travelling alone, for single-car rates may be used to move trainload quantities to a given destination. These exceptants also contend that the burden study adjustments were not used in determining the variable costs of bituminous coal under single-car rates. They maintain that even though burden study adjustments are inadequate substitutes for field studies and in-depth analyses of the movement of coal, they at least seek to reflect some of the conditions under which coal is handled.

Comment: The costing procedure used by the Coordinator for single-car shipments does not assume that a single car is travelling alone as stated by C.C.I. All single-car shipments move in an existing train with other cars. The single-car costs were calculated in the report on the basis of movements in trains with other cars. Although it may be true that many single-car shipments normally make up a coal trainload shipment, it is impossible to determine from the record which, if any, single-car shipments move in trainload lots to a given destination.[1] Nevertheless, territorial average costs reflect many instances where single-car shipments move in trainload lots.

Use of the burden study adjustments in determining the variable costs of coal under single-car rates would clearly be improper, for that study applies the same adjustments to all coal traffic whether moving as single-car, multiple-car, trainload or unit-train shipments. Since the bulk of coal traffic moves in trainload or unit-train service, these adjustments are heavily weighted toward such volume shipments. It would therefore be inappropriate to apply such adjustments to coal shipments where as here, all are known to have moved under single-car rates.

Multiple Car Costs

Criticism: C.C.I. states that although certain adjustments were made to the territorial costs in pricing out multiple-car shipments no adjustment for trailing weight of way and through trains was made as is done in the burden study; and that the trailing weights developed in the burden study based on five major coal carriers are considerably heavier than the territorial average trailing weights used in the report.

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[1] It is recognized that lake cargo, tidewater and river shipments frequently move in multiple car and trainload quantities. Such rates have been specifically identified in the Coordinator's report.

C.C.I. notes that origin and destination switching costs were reduced by 74.53 percent in the burden study, yet by only 50 percent in the report. They also observe that the report applied territorial average interchange costs each time the car was interchanged between two carriers, but made no adjustment in interchange switching minutes; they assert that this is inconsistent with the report's treatment of origin and destination switching minutes.

These utilities further state that station billing for multiple car movements is adjusted in the report on the assumption that 75 percent of the cost is related to the carload and 25 percent of the cost related to the shipment, a departure from the 1969 burden study in which station billing costs were reduced by 44 percent in Official and Western territories.

Finally, they say that the report makes no adjustment for train supplies and expenses whereas the burden study adjusts these expenses as they relate to the handling of coal traffic.

Comment: C.C.I. correctly contends that the report makes no adjustment for trailing weights of way and through trains for multiple-car shipments. Once again it is noted that the burden study adjustments are largely predicated on unit-train and trainload shipments wherein most cars move and such adjustments would not be appropriate in the case of multiple-car shipments which normally move in existing trains. The multiple-car costs were calculated on the basis of average train weights while the higher burden study train weights are generally more representative of trainload and unit-train shipments.

It is noted that the 75 percent reduction in origin and destination switching costs utilized in the burden study is weighted in favor of trainload and unit-train shipments. Therefore, we consider a 50 percent reduction in origin and destination switching to more accurately reflect the costs of multiple-car shipments.

There is no merit to C.C.I.'s allegation regarding interchange costs which have been included on a per car basis rather than on a mileage basis. The switch engine minutes at interchange points have not been reduced for multiple car shipments because the territorial average interchange costs are based on the average number of cars switched at interchange which generally entails multiple-car cuts.

As to the station clerical adjustment, an analysis of station clercial costs developed for use in Rail Form A for all years since 1968 discloses that approximately 75 percent of the costs are related to the carload and 25 percent related to the shipment.

We agree with C.C.I. that no adjustment in the Report was made to train supplies and expenses. The inherent nature of Account 402, train supplies and expenses, precludes an accurate determination of the cost related to coal movements. Moreover, we question the need for a reduction in this item since it includes services related to coal traffic such as inspection of hopper cars and closing of hopper doors. See *Coal from Fulton County, Ill. to Minn.*, 315 I.C.C. 627, 632.

Trainload Costs

Criticism.—C.C.I. considers to be too little, the 75 percent reduction which the report makes in territorial average origin and destination switching costs in the case of trainload shipments. They point out that coal mines are generally serviced by mine runs operating from concentration points or by assigned power in the case of certain trainload movements and unit-train operations; that many tariffs publishing rates on such movements restrict the loading and unloading time; and that in such case the number of cars in the minimum consignment will result in fewer switch engine minutes per car. Thus, argue C.C.I., a slight change in the number of minutes required can have a significant effect on the costs.

As an example, C.C.I. cites a trainload movement between Northern Appalachian territory and CFA territory in Table 59 which the report shows to be noncompensatory, e.g., variable costs were $1.93 per ton compared to the rate of $1.90 per ton. They state that this movement requires a minimum of 137 cars (minimum requirement for trainload of 17,000 tons divided by 124 tons per car); and that loading time at origin is restricted to four hours, or 240 minutes. They point out that 240 minutes divided by 137 loads equals 1.8 minutes per car, not the 6.9 minutes per car assigned to the shipment (25 percent of the territorial average of 27.6 minutes). In addition, C.C.I. note that the report shows free time of 10 hours for unloading this movement. Assuming the entire 10 hours is required to unload the 137 cars the unloading time per car would therefore be 4.4 minutes, not the 6.9 minutes used in the report. These utilities also assert that the receiver of trainload shipments generally maintains switching equipment to spot the loaded cars and remove the empties from the unloading point, as a result of which destination switching time is considerably reduced. C.C.I. argues that if any adjustment had been made in the origin and destination switching to reflect the restricted loading and unloading time, the above movement would be clearly compensatory.

C.C.I. also considers to be too little the 50 percent reduction in the territorial average origin and destination freight car costs. They recognize that the Report makes an allowance where the tariff specified a shorter than average detention time, but contend that tariff specifications set the outer limits of time and not the actual time the cars are held. Moreover, they state the actual detention time for trainload movements at origin and destination can only be developed by special studies.

Additionally, C.C.I. excepts to the 50 percent reduction shown in the Report in the territorial average interchange costs. They state that in many cases involving trainload and unit-train movements the power unit moves with the cars and no switching is required; only the crew is changed. Even when the power is changed, there is no requirement for a yard to classify cars from one train to another. Therefore, argues C.C.I., interchange costs are not applicable to trainload and unit-train movements.

They also state that although the actual trailing weight of the train could have been developed in many instances, the Commission's cost personnel adjusted line-haul variable costs by applying through train diesel power and trailing weight for trainload movements. Consequently, argue these utilities, use of through train trailing weights understates the tonnage and thus overstates the variable costs applicable to these movements. They again refer as an example, to Table 59, showing a rate of $1.90 and variable cost of $1.93 for a minimum trainload movement of 17,000 net tons in 137 cars (124 tons per car). The loaded movement develops 20,562 tons of trailing weight in the loaded direction (17,000 net tons plus 3,562 tons of tare weight (137 cars x 26 tons)) and the empty movement an average trailing weight of 3,562 tons (137 empty cars x 26 tons tare). The average trailing weight of the round-trip movement is 12,062 trailing tons (loaded direction of 20,562 tons plus empty direction of 3,562 tons ÷ 2). C.C.I. contend that substitution of the computed trailing weight of 12,062 tons for the trailing weight of 4,349 tons used by the cost section would result in the rate on this particular movement exceeding variable costs.

Switching.—C.C.I.'s contention that switching costs should be based on the restricted loading and unloading time at origin and destination is proper only in the case of unit-train movements. Tariff restrictions on loading and unloading time in the case of single car, multiple-car or trainload shipments have no effect on the engine minutes required or the cost to switch cars. Stated differently, switching service is normally not affected by tariff loading and unloading time which pertains to the maximum time for detaining the carrier's equipment without penalty. Inasmuch as the cars are switched prior and subsequent to the loading and unloading operations, switching is not directly affected by the loading and unloading restrictions.

However, in the case of the unit-train service tariff restricted loading and unloading time does affect origin and destination switching costs, because the cars are coupled together as a fixed consist. Thus at the origin mine the train, intact, is usually flood-loaded with the railroads performing pull-through service. At destination the train, intact, is usually automatically unloaded with the railroad performing pull-through service. Although we agree that switching costs based upon the use of restricted loading and unloading time would be proper in the case of unit-train service described above, an allowance for non-productive time should be included to give effect to lunch periods, breakdowns, repairs, fueling, etc.

The use of restricted loading and unloading time to develop switching costs would not apply in those instances where car pullers or industry switchers owned by the shipper or consignee are used in the movement of the cars. In those instances, the railroad locomotives are coupled and uncoupled at interchange tracks at the entrance to the industry, resulting in elimination of the origin and destination switching costs normally incurred by the railroads. However, the evidence of record does not support C.C.I.'s contention that in most instances, the consignee spots the loads and pulls the empties at destination.

The 75 percent reduction made in the origin and destination terminal switching costs for trainload shipments was based on the handling characteristic of four large coal and two large iron ore hauling railroads studies in connection with the Commission's burden study. From this study, the relationship of switching minutes per equated car to the territorial average was developed. We recognize that this adjustment was applied in the Burden Study to the total coal and iron ore traffic sampled; however, the adjustment is particularly applicable to trainload and volume shipments since they comprise the bulk of coal and iron ore traffic. It is not unreasonable to assume that because of the similarity of handling bulk commodities such as coal and iron ore in trainload and volume shipments, the resulting switching costs are also similar.

Freight train car ownership.—C.C.I.'s comments regarding the relation of origin and destination time to car ownership cost lack consistency. On the one hand they argue that origin and destination switching time should be based on loading and unloading time set forth in the tariff, yet on the other hand, object to the use of tariff loading and unloading time as the basis for calculating detention. As noted earlier, switching time is not normally affected by loading and unloading time, whereas detention time is based, in part, on the loading and unloading time.

In the case of multiple-car and trainload shipments in carrier-owned equipment the report reduced territorial average terminal freight-train costs per carload by 50 percent at origin and destination. Such a reduction was based on the premise that applicable tariff provisions generally limit free time for loading and unloading to 24 hours—half of the 48 hours contained in the territorial average—plus the fact that the cars are normally switched by the railroads within 24 hours from the time of loading and/or unloading. This amounts to a one-day reduction in loading and unloading time at both origin and at destination and a one-day reduction in switching time at both origin and destination. In the absence of special studies such a reduction appears to be entirely appropriate except where a shorter period of time is specified in the tariff, a distinction recognized by the Coordinator. In those situations the report did not apply a 50 percent adjustment; instead of freight-train car costs were adjusted on the basis of the record which indicated that less than one-day loading and one-day unloading time was required for these movements.

C.C.I.'s contention with regard to interchange costs has some merits. We recognize that in many instances trainload shipments are handled in large blocks at interchange. Further, in the case of a unit-train movement, only the locomotive power and the caboose are physically exchanged at interchange points. Therefore, we agree that on certain movements the interchange switching costs should be further reduced depending on the operation involved, but not completely eliminated.

Because the evidence of record was devoid of any information relative to interchange operations, we believe the 50 percent reduction made to interchange costs in the case of trainload shipments gives reasonable effect to movements receiving less than average interchange. In any event, interchange costs should not be completely eliminated since some costs will be incurred even on those movements where only the locomotives, the caboose and their crews are exchanged.

C.C.I. properly contends that the actual trailing weight of the train could be developed in many cases. In some instances both the lading weight per car and the number of cars were shown. Such information together with the average tare weight of the cars involved could be used to develop actual trailing weights of trainload shipments. However, since that information was not available in all cases, we elected to use through train costs only, thereby giving effect to the higher than average weight of the train. Nevertheless, it should be observed that where an adjustment is made in the trailing weight of the train, a corresponding adjustment should be made to reflect the increase in the number of diesel locomotive units and crewmen required. The adjustment in the number of diesel units and crew wages would offset to some extent the adjustment for trailing weights. However, the number of diesel units and additional crew members required to make such adjustment was not included in the record.

Throughout C.C.I.'s exceptions repeated reference is made to a trainload movement of coal from Fairmont, West Virginia to Monroe, Michigan for which the Report shows the variable cost at $1.93 in relation to a rate of $1.90 per ton. However, by Report and Order of the Commission, Review Board No. 4, decided May 21, 1975 in I&S Docket No. 8974, *Coal, West Virginia to Monroe, Michigan*, the present rate for the same movement was found to exceed the variable costs of transportation with a revenue to cost ratio of 195.6 percent. While the rate and the cost in the above case were for a later period than shown in the instant proceeding, the fact remains that the rate was shown to be compensatory by a wide margin. The reason for this discrepancy is clear. In I&S Docket No. 8974, *supra*, the Commission review board had the benefit of detailed record information with respect to the movement in question, including the fact that the shipper provided the locomotive, which enabled it to more precisely determine the variable cost of transportation. Unfortunately data furnished in this subproceeding, did not indicate that the locomotive units were being furnished by the shipper. Consideration of this one factor alone would have sufficiently reduced the costs to establish the rate to be clearly compensatory. In addition, this particular movement has an unusually high trailing weight of 20,562 tons in the loaded direction and thus would not be representative of the majority of the movements.

Unit-Train Costs

C.C.I. asserts that the Coordinator's report is in error to the extent that it fails to consider unit-train movements, *e.g.*, no rate/cost tables were shown specifically for unit-trains.

C.C.I. is correct in stating that the Coordinator's report contains no rate/cost tables specifically for unit trains. The order instituting this subproceeding made no specific provision for separate submission of trainload and unit train rate data. Consequently much of the movement data of record does not indicate whether unit train or trainload operations are involved. Because the Coordinator was unable to identify all unit train movements he properly included them under the trainload category. However, we are of the opinion that costs for the two types of movement would not be substantially dissimilar. Differences would depend upon details of the particular operation involved. Thus, such factors as turnaround time, ownership of equipment, switching requirements, type and tare weight of cars, net loadings of cars, number of locomotive units required, etc., all have an effect on the cost of service. For the most part the record lacks such information, precluding a more refined cost study.

In order to roughly approximate the degree of variance in costs that might be expected between trainload and unit train operations we extracted from Tables 58 and 59 of the report 10 movements that could be identified in the record as unit-train service. Those identifiable movements were then costed as unit-train service as described below.

For unit-train movements in carrier equipment terminal costs were adjusted: by reducing switching costs per carload on the basis of the loading and unloading time set forth in the applicable tariff increased for non-productive time (idle time prior and subsequent to loading and unloading by shipper and consignee); by reducing station clerical costs per carload based on the assumption that 75 percent of the costs are associated with the car and 25 percent of the costs are associated with the shipment, and by reducing special services cost per carload by 50 percent. Line-haul costs were adjusted by removing the interchange costs included in the territorial average cost on a loaded car-mile basis and substituting therefor the interchange cost based on the relationship of the interchange switching costs of $1.90 per car used for unit-train coal shipments in I&S Docket No. 34822, *Lake Carriers' Association, et al* v. *The New York Central Railroad Company et al.*, 343 I.C.C. 491, to that year's territorial average interchange cost per car. This relationship was then applied to the 1972 territorial average interchange costs, subsequently updated to the year 1973, to develop the interchange costs in the instant proceeding.

The territorial average inter-intra train switching costs per loaded car-mile was eliminated. Also, an empty return ratio of 100 percent was substituted for the territorial average empty return ratio. Additionally, the train weights were adjusted to reflect actual trailing weights shown in exhibits of record and the number of diesel units increased proportionately.

For unit-train movements in shipper cars, in addition to the above adjustments, the entire freight train car costs, both terminal and line-haul, were eliminated.

The 10 movements as costed out in the report on the basis of trainload operations are shown in Table 1, below. The same movements as costed out on the basis of unit-train operations are shown in Table 2, below. Although the limited number of identifiable movements is insufficient to support any conclusive finding, it does appear that while unit-train cost are lower than trainload costs in some instances and trainload costs are lower than unit-train costs in other instances, the cost of the two types of volume service do not vary by substantial amounts.

TABLE 1—TRAINLOAD BASIS

Rate/cost relationship on selected movements of bituminous coal

Distance	Territory	Minimum	Rate	Variable cost per net ton	Ratio of rate to variable cost
(Miles)		*(Tons)*	*(Cents)*	*(Cents)*	*(Percent)*
In carrier's equipment:					
282	South to Southeast-----	8,600	215	141	152
312	Do ------------------------	9,800	281	153	184
361	North to C.F.A.---------	9,500	447	239	187
362	Do ------------------------	4,500	441	341	129
498	South to Southeast-----	6,000	343	267	128
In shipper's equipment:					
356	Midwest to C.F.A. -----	10,000	199 1/2	160	125
429.7	North to C.F.A. --------	9,750	373	220	170
478	Midwest to C.F.A. -----	11,500	300	223	135
528	North to T.L.------------	10,000	433	261	166
634	Midwest to C.F.A. -----	11,500	340	261	130

TABLE 2—UNIT TRAIN BASIS

Distance	Territory	Minimum	Rate	Variable cost per net ton	Ratio of rate to variable cost
In carrier's equipment:					
282	South to Southeast-----	8,600	215	144	149
312	Do ------------------------	9,800	281	156	180
301	North to C.F.A. --------	9,500	447	252	177
362	Do ------------------------	4,500	441	330	134
498	South to Southeast-----	6,000	343	259	132
In shipper's equipment:					
356	Midwest to C.F.A. -----	10,000	199 1/2	150	133
429.7	North to C.F.A. --------	9,750	373	216	173
478	Midwest to C.F.A. -----	11,500	300	188	160
528	North to T.L.------------	10,000	433	252	172
634	Midwest to C.F.A. -----	11,500	340	243	140

Indexing

Criticism.—C.C.I. states that in the Coordinator's report 1972 unit costs have been updated to a 1973 level based on the method outlined in Statement No. 2-58, *Rail Carload Cost Scales by Territories as of January 1, 1958*. They contend that this method does not reflect changes in productivity, employment, traffic volume, or other factors which influence unit costs. They cite as an example, increased productivity measured by the average carrying capacity of open hopper cars. According to Table 94, page 357 of the report, the average carrying capacity has increased in each of the five year increments depicted.

Comment.—We recognize that the procedure outlined in Statement 2-58, *supra*, does not consider changes in productivity, traffic volume, service units, etcetera.

However, it should be noted that this procedure was not designed to take into account such changes, but merely to reflect different cost levels. Although the method assumes that traffic volume and service units remain unchanged, we do not believe that use of this procedure to update costs for a period of only one year (1972 to 1973) would significantly alter them. It is highly unlikely that a change in the average carrying capacity of open hopper cars between 1972 and 1973 would affect costs. Moreover, the costs in the instant case were computed on the basis of actual lading weights of the cars used and not on the U.S. average carrying capacity of the cars.

EX PARTE NO. 270 (SUB-NO. 5)

INVESTIGATION OF RAILROAD FREIGHT RATE STRUCTURE—IRON ORES

Decided February 4, 1976

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1. Upon investigation of the railroad freight rate structure on iron ores, and in particular the effect of general freight rate increases thereon, examined the technical, economic, and environmental aspects of iron ore mining, marketing, and consumption; examined the transportation characteristics and rate structure of iron ores; made extensive intracommodity revenue-cost analysis; and composed other material measuring the reasonableness and effects of the freight rate structure on iron ores.
2. Upon consideration of the record, found that iron ores are carried under conditions which, while not optimum, are probably as favorable as those associated with the transportation service performed for any other individual commodity by U.S. railroads; that the overall freight rate structure on iron ores is compensatory and not unreasonably high, but some individual rates fall above and below the zone of reasonableness; that the railroads should examine current costs and revenues on movements of iron ores shown to be noncompensatory at the September 1, 1973, rate and cost levels to determine the need for increases on the rates for these movements; that the respondents should examine current costs and revenues on movements shown to have a rate/variable cost relationship in excess of 230 percent at the September 1, 1973, rate and cost levels and that in future complaint cases a showing that movements of iron ores return revenues in excess of 230 percent of variable cost may give rise to the rebuttable presumption that the involved rates are unjustly and unreasonably high; that a need exists for a review of individual tariffs on iron ores to determine the need for republication of single-car rates as multiple-car or trainload rates in order to give shippers the benefits of high-volume traffic and in order to make analysis of the freight rate structure on iron ores more accurate; that an investigation should be instituted to determine if equal rate structures should be established for all types of ex-lake movements of iron ores; that a need exists to alter the reporting system used to develop the Freight Commodity Statistics in order to allow the determination of a total-traffic-moved category that does not include duplications; that future general rate increases on iron ores should be made on flat percentage bases when terminal and line-haul expenses increase by similar percentages to prevent increasing the relative burden borne by relatively short mileage movements; that the impact of general freight rate increases applied to the transportation of iron ores has had some effects on the capital expenditures made by iron ore mining companies and

steelmaking companies but in general has not been self-defeating and has been necessary in generating additional revenue to pay for increased labor costs and higher prices of materials and supplies; that the application of general increases authorized by the Commission has not caused any substantial distortions in the freight rate structure, but that some distortions in the freight rate structure exist which have evolved apart from general freight rate increases and which have been amplified by such general increases; that the impact of general freight increases on iron ores has not had an uneven effect in meeting the revenue requirements of individual railroads except to the extent that some railroads carry proportionately more iron ores than do other railroads; that the general freight increases sought by the railroads and authorized by the Commission have for the most part been for the purpose of offsetting higher prices of materials and supplies and increased wage costs; that railroad service on iron ore movements is currently adequate and that no indications are evident that service will not be adequate in the near future; that a need may exist to alter the freight rate relationships between the ex-lake destination groups on iron ore movements and that this need may be established by fully examining the revenue contributions made by consuming steel mills in the ex-lake destination groups in a formal investigation separate and apart from Ex Parte No. 270 that will compile data on rates, cost of service, and the volume of traffic currently moving to these destination groups.

3. Appropriate recommendations consistent with the findings made.
4. Order entered closing the Sub-No. 5 proceeding.

William F. Cottrell, Howard D. Koontz, Charles N. Marshall, Gerald R. Robinson, James L. Tapley, and *John S. Walker* for respondent railroads.

Leonard S. Goodman, (formerly Special Projects Counsel to the Commission), *Joseph C. Lynch,* and *William R. Southard* for Special Projects Staff, Bureau of Enforcement.

John H. Caldwell, J. Raymond Clark, Clyde Comstock, John F. Donelan, M. A. Frater, Lance B. Johnson, John K. Maser III, Paul V. Miller, Warren Price, Jr., and *Russell R. Sage* for shippers and other interested parties.

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REPORT AND ORDER OF THE COORDINATOR

HARDIN, *Commissioner:*

This subnumbered proceeding, as noted in the prior report of the Coordinator in *Investigation of Railroad Freight Rate Structure,* 345 I.C.C. 1 (September 28, 1973), was instituted for the purpose of examining in detail the rate structure on iron ores. As stated in the prior report, the principal foci of this subnumbered proceeding are as follows:

1. The possible self-defeating nature of general rate increases on iron ores with respect to generating revenues.
2. Any disparities and distortions in rate relationships caused by general rate increases on iron ores.
3. The uneven effects of general freight rate increases on iron ores on individual railroads.
4. The effect of such general increases on iron ores on railroad incentive to improve service in line with shipper requirements.

As further stated in the prior report, the ultimate objective of this proceeding is to take whatever corrective action may be shown to be necessary. Such corrective action may take many forms. For example, it may be urged that the findings in this investigation be considered (a) in connection with determinations as to whether individual rate proposals sponsored singly or jointly by the railroads should be suspended and/or investigated, (b) as a supplement to the record in future rail general increase cases, or (c) as a vehicle for recommending statutory changes.

The evidence in this proceeding was developed under a nonadversary procedure. A format for the presentation of evidence was established by order of the Coordinator on December 27, 1973, and all persons were given a full opportunity initially to submit evidence they deemed appropriate, including evidence of cost of service. Opportunity was likewise given all parties to present evidence in rebuttal and surrebuttal. In order to promote a nonadversary atmosphere throughout this proceeding the parties were urged to consult with the Special Projects Counsel, an independent counsel appointed by the Commission to assist in the development of a record in the public interest.

The December 27, 1973, order instituting this investigation directed the parties to submit evidence divided into six parts. These parts relate to the previously stated issues.

Under Part I, Railroad Freight Rate Structures on Iron Ores, the parties were asked to provide: maps, diagrams, representative and/or repetitive rates, and narratives depicting the freight rate structures and formulas upon which the freight rates on iron ores are based, as of September 1, 1973; complete tariff references for all rates shown; evidence designed to show the traffic movements and the respondents' participation; representative and/or repetitive carload movements showing origin, destination, rate, minimum weight, actual loading, carload revenue, actual and short-line distances, ton-mile earnings based on actual distances and estimate of extent to which those rates are used; and multiple-car and trainload movements showing origin, destination, actual and short-line distances, rate, required minimum weight, actual loading, carload revenue, rate reduction over single-carload rate, ton-mile earnings based on actual distances, and an estimate of the extent to which such multicar-type movements are made (tons moved).

Under Part II, Self-Defeating Nature of General Increases on Iron Ores, the parties were given the following instructions:

A. Respondents were to show the general rate increases sought, those authorized by the Commission, and those actually applied by the carriers individually or any other rate change on all significant movements of iron ores beginning with and subsequent to Ex Parte No. 256 increases. Reasons for the application of increases less than those authorized as well as other rate changes were required to be set forth.

B. Evidence by any party designed to show that general rate increases on iron ores may or may not have been self-defeating in nature with respect to generating revenues was to be submitted.

Under Part III, Disparities and Distortions Caused by General Increases, the parties were given the following instructions: Evidence by any party relating to rate charges, affected by general rate increases, for the movement of iron ores beginning with and subsequent to Ex Parte No. 256 increases, which may have resulted in disparities or distortions between competing shippers and/or localities, was to be provided. This evidence was to be accompanied by formulas upon which the freight rates on iron ores are based and by complete tariff references for all rates shown. This evidence would specify any reason, if known, for such disparities and distortions.

Under Part IV, Uneven Effects of Increases on Individual Railroads, the parties were asked to present evidence designed to show the uneven revenue effects (if any) of general rate increases in freight rates on iron ores on individual railroads, why these results may have occurred, and what corrective action could be taken to remedy these effects.

Under Part V, Railroad Service, the parties were asked to present evidence bearing on the issue of whether general increases have provided sufficient revenues to induce the railroads to undertake improvements in service to meet shippers' requirements, and evidence as to whether the railroads, in their proposed rates in general rate increase proceedings, have taken into account possible variations in services being provided shippers.

Under Part VI, Matters Not Otherwise Listed, instructions given were that all parties should endeavor to submit their evidence into one or more of the categories listed in parts I through V above, including revenue/cost relationships. Evidence submitted under part VI would specifically indicate the purpose for which it is being introduced and the reason it does not come within one of the five foregoing categories. The principal focus of the investigation as set forth in the report of the Coordinator, 345 I.C.C. 1, was to be kept in mind.

HIGHLIGHTS OF THE REPORT

The following are the main highlights of the report:

-0- Furnishes the Commission, public interest groups, shippers, and carriers with detailed information concerning the freight rate structure on iron ores for future use.
-0- Describes the technical, financial, and environmental aspects of the mining, processing, and consumption of iron ores.
-0- Describes the transportation characteristics of iron ores.
-0- Explores the relationship of the freight rate structure to the demand for iron ores.
-0- Contains 254 cost-revenue comparisons relating to the compensatory nature of representative or repetitive movements of iron ores.
-0- Analyzes cost evidence presented by the parties.
-0- Presents revenue-mileage scatter charts by territory of origin and weight groups.
-0- Presents financial information for the involved railroads.
-0- Examines the use of iron ores in the steelmaking process.
-0- Examines the intracommodity cost-revenue comparisons.
-0- Examines disparities and distortions within the freight rate structure on iron ores.

- -0- Discusses whether general increases are self-defeating in nature; whether there are uneven effects on individual railroads, and the impact upon railroad service, environmental considerations, and other matters.

At times in the report the editorial "we" is used. However, the report is the sole responsibility of the Coordinator and does not necessarily reflect the view of the Commission. Exceptions to the report may be filed in accordance with the Commission's General Rules of Practice and the report will then be considered by the Commission. However, because of the size of the record and the complexity of the issues, the time for filing exceptions will be extended to 90 days from the service date of this report and order unless otherwise indicated, rates and costs are shown in amount per net ton as of September 1, 1973.

PART I

RAILROAD FREIGHT RATE STRUCTURE ON IRON ORES

The purpose of part I is to give a detailed analysis of the railroad rate structure on iron ores. While the term "rate structure" is commonly used, and will be used in this report, it is a fallacy to assume that the railroads have a single freight rate structure on iron ores or even a single freight rate structure within regions. The railroad rate structures on a particular commodity consist of numerous schedules of charges for rail transportation services. Although these schedules are frequently constructed in conformity with a particular rate scheme, such as on a tapering mileage basis, in most instances the historical basis or bases for the rates is obscure; and if known, that knowledge is generally limited to the railroad or to a sophisticated tariff expert. In effect, in using the term "rate structure" we mean only the collection of rates for the movement of iron ores.

In order to obtain a proper perspective of the iron ore rate structure, some background in regard to the industries involved is necessary. Accordingly, the first two sections of this part are designed to present a general overview of the sources and consumption of iron ores. For the most part, the figures and narratives presented will deal with national or regional situations.

The third section of part I is concerned with the actual transportation of iron ores. Patterns of movements, relationships of rates to commodity values, rate structures by territory, revenue/cost analysis, and other financial data will be presented in order to offer the most complete picture possible of the freight rate structure on iron ores as it currently exists. Analysis of this data will begin in this part and will be continued in later parts of the report.

Part I—Railroad Freight Rate Structure on Iron Ores

(A) Production of iron ores

1. Sources of iron ores

Iron ores, as used in this report will include items described in Standard Transportation Commodity Code Nos. 10 111, to wit—iron direct-shipping ores, crude; 10 112—iron—beneficiating-grade ores crude—also applies on iron ores to processing or beneficiating plants; and 10 113—iron concentrates or agglomerates. Description of involved items at the STCC seven-digit level may be found in the Standard Transportation Commodity Code Tariff No. 1-B ICC-C-998.

Briefly, the five-digit STCC items may be defined as follows:

STCC 10 111: These ores are the iron-bearing material as mined, prior to any processing for removing waste constituents although it may be crushed or screened. This material is generally shipped directly to mills for processing or smelting in blast or open-hearth furnaces.

STCC 10 112: This is crude ore which moves to processing or beneficiation plants for further treatment and upgrading before it can be put directly into furnaces.

STCC 10 113: Iron concentrates consist of upgraded ore from which waste constituents have been removed through beneficiation processes. Such concentrates are normally ready for blast furnace use. Agglomerates consist of compact masses of either ores or concentrates. Fine-grained ore or iron concentrates through treatment are combined to form agglomerates which may take the form of sinters, pellets, or briquettes. Pellets consist of low-grade concentrates and ore fines held together with a binding agent.

Approximately two-thirds of the iron ore used in the United States for iron and steelmaking since 1960 is of domestic origin. The remainder is imported (table 1 and figure 1).

The iron ore reserves and resources of the United States are presented in table 2. Reserve ores are those iron-bearing materials that can be mined profitably under present technologic and economic conditions. Potential ores are those materials that could be mined profitably if the technology of mining, beneficiating, or transporting the ore is improved to an extent now deemed possible or if economic conditions in the area of the ore's location become favorable.

Reserve ore is estimated to be 7,494 million gross tons. In addition, another 3,000 million gross tons of taconite ores are believed to be proven reserves.[1] Potential ore is estimated to be 96,353 million gross tons.

Domestic ore is mined primarily in four regions. The Bureau of Mines and the American Iron and Steel Institute (AISI) differ in the States they group within each of the regions. The Bureau of Mines' groupings will be used in this report because data is available in more detail. Table 3 lists the ore-producing regions and the States within each region. Table 4 lists the percentage of shipments of usable iron ore from each region. As noted in table 4, the Lake Superior region, shown in map 1, currently ships in excess of 80 percent of the usable iron ore produced in the United States.

---

[1] Source 21.

TABLE 1

Consumption of iron ore at United States iron and steel plants. 1964-1973 (thousands of gross tons)

Year	Iron ore originating areas					Total foreign ores	Total	Percentage of foreign ores consumed
	United States ores		Canadian ores		Other foreign ores			
	Great Lakes	Other U.S.	Great Lakes	Other Canada				
1964	62,230	16,489	5,300	16,577	21,601	43,478	122,197	35.6
1965	62,465	16,455	5,313	19,197	21,713	46,023	125,143	36.8
1966	64,897	16,199	5,194	19,676	21,728	46,598	127,694	36.5
1967	60,538	15,110	4,521	18,655	20,158	43,334	118,982	36.4
1968	62,554	14,461	4,741	20,168	18,525	43,434	120,449	36.1
1969	68,698	15,773	4,151	17,167	22,761	44,079	128,550	34.3
1970	65,572	15,229	4,221	18,001	20,238	42,460	123,261	34.4
1971	59,547	13,548	3,828	14,894	17,149	35,871	108,966	32.9
1972	68,782	13,075	3,871	16,480	17,729	38,080	119,937	31.7
1973	76,603	13,773	4,251	17,992	24,454	46,697	137,073	34.1
1974 (8 months)	48,834	8,486	2,170	10,932	13,367	26,469	83,789	31.6

FIGURE 1

UNITED STATES IRON ORE PRODUCTION AND IMPORTS FOR CONSUMPTION

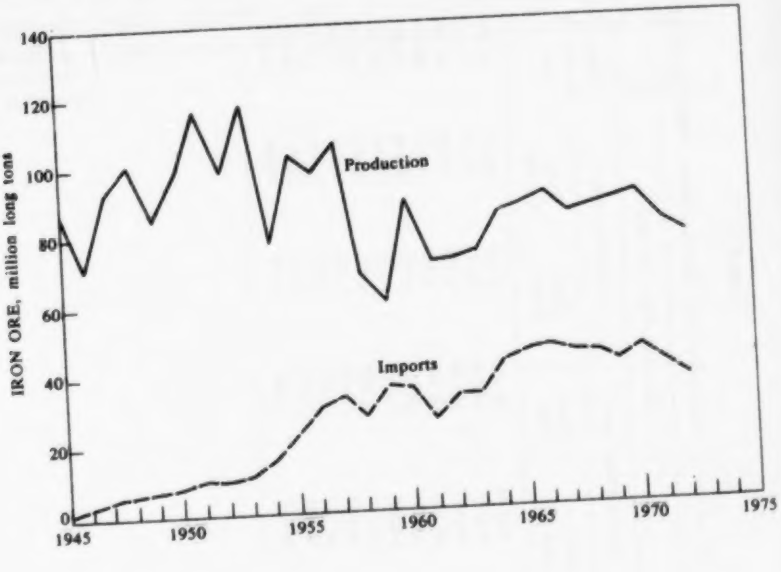


TABLE 2

Iron ore reserves and resources of the United States (million gross tons)

Region	Reserve ore	Potential ore	Total resources
Lake Superior:			
Minnesota	1,814	38,581	40,395
Michigan	405	17,224	17,629
Michigan and Wisconsin	36	18,996	19,032
Wisconsin	—	49	49
Total	2,255	74,850	77,105
Northeastern:			
New York	21	932	953
Pennsylvania	79	5	84
New Jersey	—	16	16
Maine	—	317	317
Total	100	1,270	1,370
Southeastern:			
Alabama	2,848	2,366	5,214
Georgia	52	2,015	2,067
Tennessee	50	1,453	1,503
Virginia	—	492	492
Mississippi	16	—	16
Total	2,966	6,326	9,292
Central Gulf:			
Texas	174	—	174
Missouri	305	4	309
Oklahoma	1	1	2
Louisiana	162	—	162
Total	642	5	647
Central-Western:			
Montana	66	283	349
South Dakota	—	493	493
Colorado	7	98	105
Utah	446	—	446
New Mexico	124	15	139
Wyoming	444	274	718
Total	1,087	1,163	2,250
Western:			
Arizona	103	439	542
Nevada	168	—	168

Iron ore reserves and resources of the United States (million gross tons)—Continued

Region	Reserve ore	Potential ore	Total resources
California	156	1	157
Oregon	3	1	4
Washington	6	2	8
Total	436	443	879
Alaska	8	11,272	11,280
Hawaii		1,024	1,024
Grand Total	7,494	96,353	103,847

Source: 21

TABLE 3

States within each iron ore production region

Lake Superior:
- Michigan
- Minnesota
- Wisconsin

Southeastern States:
- Alabama
- Georgia
- North Carolina

Northeastern States:
- New York
- Pennsylvania

Western States:
- Arizona
- California
- Colorado
- Idaho
- Missouri
- Montana
- Nevada
- New Mexico
- Texas
- Utah
- Wyoming

Source: 27

TABLE 4

Percentage of shipments of usable iron ore from each region (not including byproduct ore)

Year	Lake Superior	Northeastern	Southeastern	Western
1974[1]	80.0	3.3	0.4	16.3
1973	83.8	2.6	0.4	13.1
1972	82.4	3.0	0.6	14.0
1971	80.0	3.7	0.7	15.6
1970	78.8	3.4	1.4	16.3
1969	79.1	3.8	([2])	([2])
1968	78.1	4.3	1.6	16.0
1967	77.2	4.7	2.1	16.0
1966	77.2	5.0	2.2	15.6

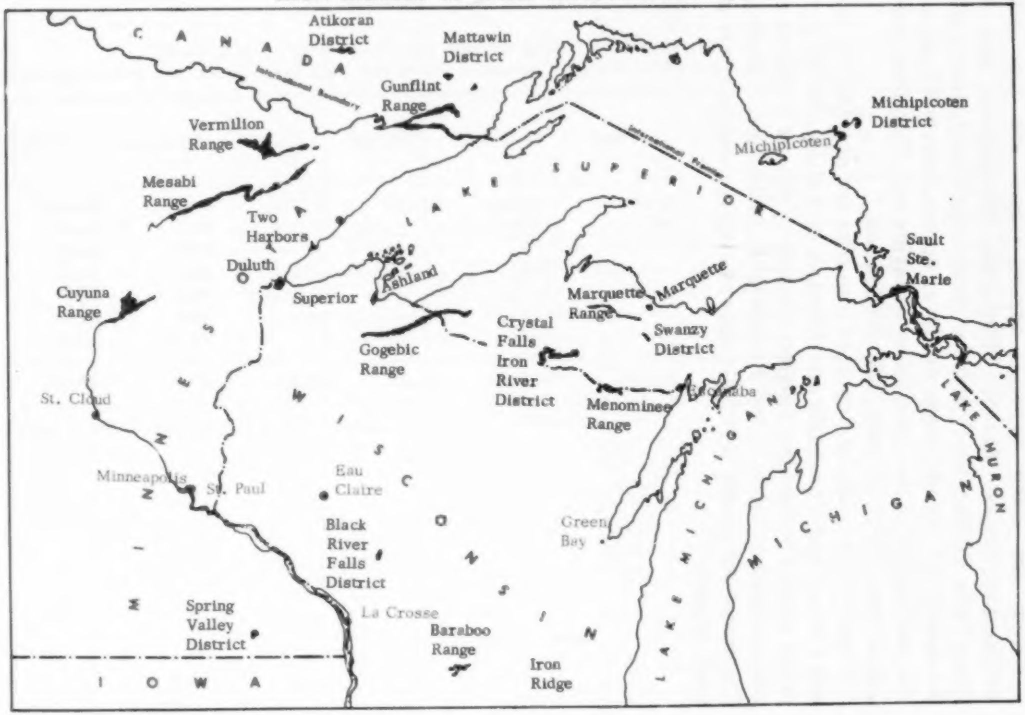
Source: 22-28

[1] Through 30 June 1974.
Source: Mineral Industry Surveys, Iron Ore Monthly, July 1974.

[2] Withheld to avoid disclosing individual company data.

Map 1

IRON RANGES OF LAKE SUPERIOR REGION


CANADA
Atikoran District
Mattawin District
International Boundary
Gunflint Range
Vermilion Range
Mesabi Range
Two Harbors
Duluth
Superior
Ashland
LAKE SUPERIOR
Michipicoten District
Michipicoten
Sault Ste. Marie
Marquette
Marquette Range
Swanzy District
Crystal Falls Iron River District
Menominee Range
Escanaba
Gogebic Range
Cuyuna Range
St. Cloud
MINNESOTA
Minneapolis
St. Paul
Eau Claire
WISCONSIN
Black River Falls District
Green Bay
La Crosse
Baraboo Range
Iron Ridge
Spring Valley District
IOWA
LAKE MICHIGAN
MICHIGAN
LAKE HURON

Within the Lake Superior region, there are four primary production ranges, Mesabi, Marquette, Menominee, and Black River Falls. Production figures for these ranges are found in table 5. As noted, the Mesabi range produces approximately 80 percent of the total output of the Lake Superior region and, therefore, provides almost two-thirds of total U.S. production.

Countries of origin of imported iron ores are provided in table 6, and Canada and Venezuala are shown as providing over 80 percent of the total. The customs districts through which the iron ores arrive are provided in table 7, and Philadelphia, Baltimore, Chicago, and Cleveland are shown to handle approximately three-quarters of the total imports.

TABLE 5

Usable iron ore produced in Lake Superior district, by range
(Thousand long tons and exclusive after 1905 of ore containing 5 percent or more manganese)

Year	Marquette	Menominee	Gogebic	Vermilion	Mesabi	Cuyuna	Spring Valley	Black River Falls	Total[1]
1954-1967	359,601	296,591	320,334	103,528	2,613,767	69,375	8,066	---	3,771,261
1968	10,086	3,684	---	---	51,411	961	83	---	66,224
1969	10,048	3,369	---	---	55,275	---	---	38	68,730
1970	10,363	2,394	---	---	56,073	---	---	806	69,636
1971	9,495	2,424	---	---	51,283	---	---	832	64,034
1972	9,131	2,533	---	---	48,998	---	---	888	61,550
1973	9,036	2,404	---	---	60,021	---	---	956	72,416
Total	408,724	310,995	320,334	103,528	2,876,807	70,336	8,149	2,564	4,101,435

[1] Data may not add to totals shown because of independent rounding.

TABLE 6

U.S. imports for consumption of iron ore, by country
(Thousand long tons and thousand dollars)

Country	1970		1971		1972		1973	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Angola	---	---	---	---	---	---	40	273
Argentina	---	---	---	---	---	---	31	340
Australia	638	7,389	1,008	12,692	687	9,245	464	5,840
Belgium Luxembourg	---	---	---	---	---	---	17	160
Brazil	1,991	17,865	1,772	16,547	1,115	11,990	3,183	36,295
Canada	23,934	297,203	20,342	267,424	18,168	247,757	21,628	311,893
Chile	1,581	12,805	878	7,152	308	2,877	205	1,712
Liberia	1,873	17,216	1,838	16,768	2,761	22,740	2,734	23,667
Libya	103	789	---	---	---	---	---	---
Mauritania	72	664	---	---	40	687	47	418
Nigeria	30	152	52	399	85	729	---	---
Norway	49	356	---	---	(¹)	6	---	---
Peru	1,329	13,771	1,063	12,443	1,318	15,048	1,501	19,685
Phillipines	---	---	---	---	---	---	25	633
Sweden	172	1,909	178	2,220	273	3,952	273	4,385
Uruguay	49	444	---	---	---	---	---	---
Venezuela	13,026	108,493	12,953	114,176	10,926	99,951	13,148	128,169
Other	44	462	40	843	80	952	less than 1	18
Total	44,891	479,518	40,124	450,644	35,761	415,934	43,296	533,488

[1] Less than 1/2 unit.

TABLE 7

U. S. imports for consumption of iron ore, by customs district
(Thousand long tons and thousand dollars)

Customs district	1971		1972		1973	
	Quantity	Value	Quantity	Value	Quantity	Value
Baltimore, Md.	8,452	91,103	7,515	75,346	9,069	98,039
Buffalo, N.Y.	2,507	38,122	2,085	33,665	2,840	44,970
Chicago, Ill.	4,596	57,961	5,505	73,300	13	141
Cleveland, Ohio	6,026	72,880	5,153	67,272	5,248	74,064
Detroit, Mich.	859	13,851	954	13,539	6,583	91,682
Houston, Tex.	258	3,690	478	7,285	1,465	20,544
Los Angeles, Calif.	101	812	37	292	1,005	15,517
Mobile, Ala.	4,762	46,717	3,489	34,416	192	1,151
New Orleans, La.	500	4,944	838	9,269	4,107	43,669
Ogdensburg, N.Y.	3	337	4	444	4	431
Philadelphia, Pa.	11,718	115,999	9,157	94,189	11,951	131,723
Portland, Oreg.	114	1,332	288	3,094	157	1,925
Wilmington, N.C.	223	2,516	257	3,819	187	3,161
Other	5	380	1	4	1	2
Total	40,124	450,644	35,761	415,934	43,296	533,488

Part I(A)(2)—Refining processes prior to consumption.

Until shortly after World War II, most of the iron ore mined in the United States was of high-enough quality that it could be shipped directly for use in a blast furnace without any treatment other than crushing and screening. Today, this direct-shipping ore is nearly depleted and the ore that remains (including Taconite Rock containing 22 to 26 percent iron), generally requires treatment before it can be input to a blast furnace. The treatment the ore receives to improve its quality is called beneficiation. Beneficiated ores are produced by concentration and by agglomeration.

The decreasing quality of U.S. ore is exemplified by the fact that in 1951 only 1.3 tons of crude ore had to be mined to produce 1 ton of usable ore. By 1971, it took 2.45 tons of crude ore to produce 1 ton of usable ore.[2]

Table 8 shows the percent of usable ore shipped from U.S. mines by the type of treatment received. The percent of ore shipped without any treatment has steadily been decreasing. By 1971 only 8.3 percent of the ore could be shipped without treatment. The percent of ore formed into agglomerates has steadily been increasing to the 1971 level of 68.5 percent of the ore shipped.

---

[2] Source 27.

In addition to beneficiation (concentration and agglomeration), ores can also undergo direct reduction. This is a term which applies to any process, other than the blast furnace, which can be used to extract iron from iron ore. Direct reduction normally involves the use of a reductant, such as hydrogen obtained from natural gas. Other reductants could include coal, peat, oil, et cetera.

TABLE 8

Percent of usable ore shipped from U.S. mines, by type

Year	Direct shipping ore	Concentrates	Agglomerates
1971	8.3	23.1	68.5
1970	8.4	27.6	63.9
1969	10.7	27.1	62.2
1968	11.3	29.7	59.0
1967	19.5	27.2	53.4
1966	21.6	33.8	44.6

Sources: 22-27

Prereduced ores are normally formed into pellets or briquettes. Pellets are about 95 percent reduced. Briquettes are 86-92 percent reduced. Prereduced ores have been available in small amounts since around 1970 and direct reduction capacity is estimated to be 2 to 3 million net tons in 1973[3] including over 1 million tons of capacity of Venezuela.

Concentration consists of upgrading the ore quality by simple physical processes such as crushing, screening, washing, and magnetic separation. Except for low-grade ores, i.e., ores containing 22-40 percent iron, concentration normally produces an ore suitable for use in a blast furnace. Low-grade ores require such extensive crushing that the resulting concentrate is too fine for use in a blast furnace. In addition, the concentration of the higher grade ores produces fine particles called ore fines which also cannot be used in a blast furnace. Both the low-grade concentrates and the ore fines require further treatment, called agglomeration, before they can be smelted.

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[3] Source 17.

Agglomeration is the process of forming the fine particles into larger particles. There are two major types of agglomeration—sintering and pelletizing.

Sinter is produced by fusing ore fines and other fine particles reclaimed from the steelmaking processes, such as flue dust and mill scale. Modern sinter-making normally includes the addition of fluxes. Generally, the sintering process takes place at the steel mill.

Low-grade ore concentrates are normally too fine even to be formed into sinter. Instead, these concentrates and the extremely small ore fines are formed into pellets of 63.5 percent iron content. Pellets are formed by using a suitable binding agent to combine the particles into a pellet and then baking the pellet. Pelletizing normally takes place near the mine.

Table 9 summarizes the raw materials consumption per net ton of agglomerate produced. The decreased use of coal, coke breeze, limestone, and flue dust between 1968 and 1971 is the result of a decreased use of sinter and an increased use of pellets in blast furnaces. Table 10 gives the percentage of each type of agglomerate produced. The 1972 data appears inconsistent in both tables 9 and 10 and is undoubtedly in need of revision.

Due to the decreasing availability of high quality iron ore, the use of agglomerates is expected to continue to increase in the near term. Table 11 describes the typical production function for agglomerate production. Except for energy and labor requirements, these data are based on the data in table 9. The energy and labor requirements are based upon a study by Nelson.[4]

It is assumed the production function for agglomerates in the long term will be similar to that of the near term given in table 4.

TABLE 9

Raw material consumption per net ton of agglomerates produced

Raw materials	Units	1972[1]	1971	1970	1969	1968
Ore fines and concentrates	Net tons	1.11	0.86	0.86	0.88	0.90
Flue dust	---do---	0.02	0.03	0.03	0.03	0.03
Scale, cinder, et cetera	---do---	0.04	0.04	0.04	0.04	0.04
Coke breeze	---do---	0.02	0.02	0.02	0.02	0.02
Coal	---do---	0.003	0.003	0.004	0.006	0.005
Limestone & dolomite	---do---	0.08	0.07	0.08	0.08	0.08

[1] Preliminary.
Source: 3

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[4] Source 15.

TABLE 10

Percentage of agglomerate production by type of agglomerate

Year	Pellets	Sinter	Other	Total
1972 (1)	51.4	48.6	(2)	100.0
1971	60.1	39.9	(2)	100.0
1970	57.6	42.3	0.1	100.0
1969	54.3	45.6	0.3	100.0
1968	52.8	47.1	0.1	100.0

[1] Preliminary.

[2] Included with pellets.

Source: 3

TABLE 11

Raw material consumption per net ton of agglomerate production in the near term

Raw material	units	Amount
Ore fines and concentrates[1]	Net tons	0.86
Flue dust[1]	do	0.03
Scale, cinder, et cetera[1]	do	0.04
Coke breeze[1]	do	0.02
Coal[1]	do	0.003
Limestone and dolomite[1]	do	0.08
Electricity[2]	KWHR	17.0
Natural gas[2]	10^6 BTU	0.66
Labor[2]	Manhours	0.36

[1] Based on data in table 9.

[2] Source: 15

Direct reduction refers to any process, other than the blast furnace, which is used for chemically reducing iron ore and agglomerates to metal.

There are three general types of processes for direct reduction: (1) rotary kiln, (2) vertical shaft, and (3) fluidized bed.

In the rotary kiln, coal, limestone, and natural gas are used to reduce the iron ore. The coal, limestone, and high-grade ore pellets are fed into a conveyor which moves them through the kiln where the reduction takes place.

In the vertical shaft, reducing gas is produced by the reforming of natural gas into hydrogen, carbon monoxide, carbon dioxide, and unconverted methane. This reformed gas is then heated and passed down through a fixed bed of ore in a retort. The hydrogen is converted to water in reducing the ore. The reducing gas is then used to preheat and partially reduce ore in another retort.

In the fluidized bed process, the iron ore is first preheated to around 1,700°F. The ore then enters the fluidized bed reactor where it is reduced using natural gas.

Production functions for direct reduction are not available. A representative figure of the energy requirement for direct reduction is around 14 million BTU per net ton of iron in a product 95 percent reduced.[5] However, this figure is highly variable for the different direct-reduction processes.

If direct reduction does not become widely used in the long term, then almost all iron ore will be formed into agglomerates. At present it is not possible to predict the mix between the direct reduced ore and the agglomerates.

Figure 2 provides typical routing of crude ore through the stages above-mentioned from the mine to the mill

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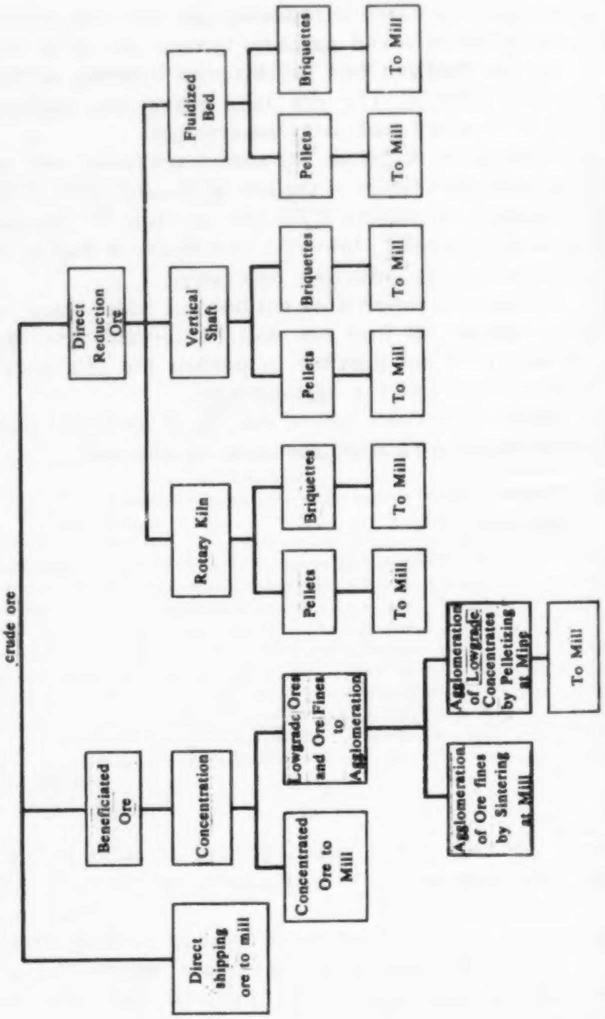
[5] Sources 12 and 15.

FIGURE 2

ROUTES OF ORE FROM MINE TO MILL


crude ore
Direct shipping ore to mill
Beneficiated Ore
Concentration
Concentrated Ore to Mill
Lowgrade Ores and Ore Fines to Agglomeration
Agglomeration of Ore fines by Sintering at Mill
Agglomeration of Lowgrade Concentrates by Pelletizing at Mine
To Mill
Direct Reduction Ore
Rotary Kiln
Pellets
Briquettes
To Mill
To Mill
Vertical Shaft
Pellets
Briquettes
To Mill
To Mill
Fluidized Bed
Pellets
Briquettes
To Mill
To Mill

Part 1(A)(3) Iron ore marketing.

While detailed marketing information has not been provided directly by the submissions in this subnumbered proceeding, the information provided as to ownership and transportation characteristics of iron ores allows brief comments to be made concerning the effects of marketing on the overall transportation picture.

A number of consignee steel companies have noted that they own or participate in the ownership of the mines, both domestic and foreign, that supply their requirements for iron ores. This ownership as well as the nature of concentrated supply origins and consumption destinations has fostered long-term contractual arrangements and a regularity of flow of iron ores. In part I(c)(1) the transportation characteristics of iron ores will be explained in more detail but the general outlines of these movements should be noted at the outset.

The key word in understanding the traffic flow is regularity. Although demand varies according to conditions in the steel industry, mining and movements generally occur year round. The procedures for shippers are both routine and efficient as a result of years of experience in preparing the ores for movements, the establishment of facilities and times for loading, and the working relationships developed with the carriers.

The carriers have also been able to dedicate the necessary equipment and provide schedules for the shippers as a result of both experience in the involved movements and expectations of large volumes and consistency of traffic flow. Both factors have made long-term planning and significant capital expenditures feasible.

For the consignees the picture is also simplified. As long-term planning is possible within certain limitations, purchasing difficulties have been minimized and regular procedures for unloading have been instituted. While breakdowns in the patterns occur as a result of strikes, weather conditions, and other abnormalities, an overview indicates a generally smooth-running operation between shipper, carrier, and consignee.

Part 1(A)(4): Environmental considerations in mining.

Stated simply, the primary environmental consideration in mining iron ores is that the supply of these ores, as noted in previous sections, is finite. The days are gone when natural resources of any type may be considered to be in infinite supply. The ores we use today will not be available tomorrow except through recycling.

Beyond the irreplacable nature of iron ore within this country, a secondary factor of importance is increasing dependence upon foreign sources for high-grade ores. The dangers of dependence on foreign sources of oil are well known and while similar problems have not as yet occurred with iron ore imports, there is simply no guarantee that in the future these supplies will be made available at a reasonable cost.

As pointed out in the environmental impact statement served in this proceeding, extraction and processing of raw materials produces only one major pollutant for which data was available, particulates. In addition, the energy requirements of the extraction processes result in secondary pollution produced by the involved electric utilities.

Data for the uncontrolled air emission and energy consumption per net ton of activity in extraction and processing is presented in table 12. These discharges are at mine locations which are usually substantial distances from major population centers.

While the processing schemes utilized depend in large measure on the iron content of the ores being mined, their geochemical states, and locations, a generalized treatment scheme is outlined in figure 3, and sources of major pollution and energy demands are depicted.

TABLE 12

Uncontrolled emissions from and energy requirements for raw material extraction and processing

Raw material/process	Air (particulates) (pounds/ton ore)	Energy (KWH/ton)	Data[4] sources
Iron ore—			
Screening	5-6		6 & 29
Crusher	2	[1]70-2100	
Coal preparation—			
Blasting and crusher	0.5	[2]12-23	6 & 16
Screen	1.5		29
Bins	10.0		29
Limestone—			
Blasting and crushers	51	[2]135	6 & 29
Kilns	140	1240	o & 29
Uxygen—			
Compression	[3]0	1330	6

[1] Total energy for ore extraction and processing. Range due to requirements of different grades of ore.

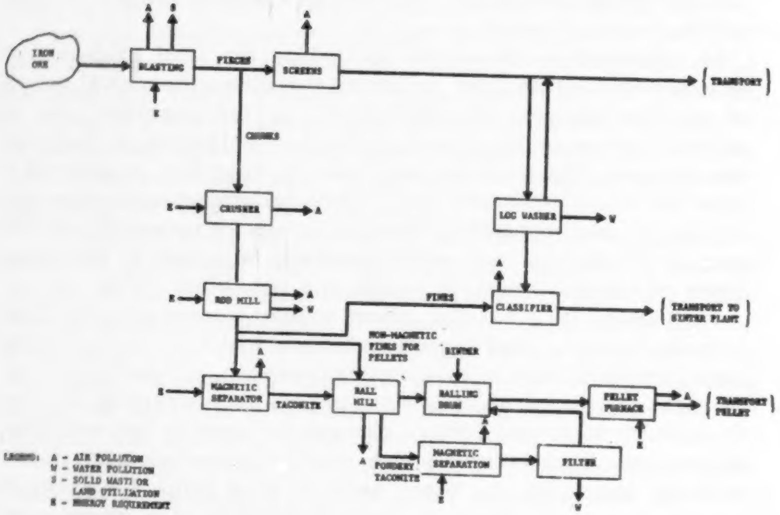
[2] Blasting energy based upon iron ore data in source 1.

[3] Included in utility industry pollutants.

[4] Numbers refer to reference at end of report.

FIGURE 3

IRON ORE FLOW


IRON ORE
BLASTING
A
S
E
PIECES
SCREENS
A
TRANSPORT
CHUNKS
E
CRUSHER
A
LOG WASHER
W
A
E
ROD MILL
A
W
FINES
CLASSIFIER
TRANSPORT TO SINTER PLANT
NON-MAGNETIC FINES FOR PELLETS
BINDER
A
E
MAGNETIC SEPARATOR
TACONITE
BALL MILL
BALLING DRUM
PELLET FURNACE
A
TRANSPORT PELLET
E
A
A
POWDERY TACONITE
MAGNETIC SEPARATION
FILTER
E
W
LEGEND: A - AIR POLLUTION
W - WATER POLLUTION
S - SOLID WASTE OR LAND UTILIZATION
E - ENERGY REQUIREMENT

SOURCE: AMERICAN IRON AND STEEL INSTITUTE, 1972, STEELMAKING FLOW CHARTS

Part I(B)(1): Consumption of iron ores and pig iron figures and trends (domestic & import).

As noted above, modern steelmaking requires the use of virgin iron ore and recycled iron and steel scrap for the production of steel. The proportion of ore and scrap inputs to the steelmaking "heat" varies with the processes used to produce the steel (see infra). The shortrun demand for ore is a function of the demand for steel, the processes used in producing the steel, blast furnace capacity for producing pig iron, and, to a degree, the price of ore and the price of scrap.

As explained in the section describing the steel industry, the various processes used for producing steel have theoretical ranges of pig iron charges. The amount of pig iron consumed can be adjusted as long as the ranges specified by the theoretical limits are not violated. The total pig iron demand, therefore, is dependent upon the mix of processes used in the total production process and the total demand for steel. If demand for steel is normal or low, the amount of pig iron used would normally be closer to the upper limits of the pig iron/scrap production possibility curve.

The demand for ore is also related to blast furnace capacity. Blast furnaces require a large capital investment and a significant startup cost. Therefore, once in an operating condition, it is desirable, from the steel companies' point of view, to keep them operating as close to capacity as possible. When demand for steel is low, and blast furnace capacity is relatively high, pig iron usage increases relative to scrap usage. On the other hand, if blast furnace capacity is relatively low in comparison to the demand for steel, scrap usage increases faster than pig iron usage. Both situations have occurred in the past decade. In the middle sixties, iron ore consumption was high in comparison with scrap consumption because of an excess blast furnace capacity relative to steel production. During recent years the reverse has been true. The blast furnace capacity was not capable of meeting the requirements for the level of desired steel production, and decreases in the percentage of pig iron used in the various steel-producing furnaces were observed.

In addition to the factors described above, the long-range demand for ore will be a function of the development and implementation of new technologies such as continuous casting, preheating of scrap for basic oxygen and electric furnace charges, and prereduced ore.

Continuous casting reduces the amount of home scrap produced and, therefore, will either increase the demand for prompt industrial scarp and obsolete scrap in high scrap demand years or will increase the demand for iron ores in average or low scrap demand years. Preheating scrap permits the scrap charge in basic oxygen furnaces to increase from an average of 29 percent to a theoretical maximum of around 50 percent. The use of preheating, therefore, would reduce the demand for pig iron since more scrap could be used in the basic oxygen furnace charges. Similar results for preheating scrap in electric furnaces would not result, because electric furnaces in general are presently charged at 98 percent scrap. It could have the effect of increasing the proportion of steel made in electric furnaces, thereby reducing the demand for pig iron.

Finally, a technological development which will have a significant impact on the use and demand for iron ores is the development of economically viable prereduced ore. Prereduced ore has been accepted as a direct competitor to scrap. If prereduced ore can be developed and manufactured at a price comparable to that of scrap, then it may make significant inroads into the scrap market thereby increasing the total demand for ores.

The sections which follow describe the iron and steel industry in terms of production technology. Special emphasis is directed toward the use of ore and scrap in iron and steel production. When viewing the tables and figures presented, it is important to note the exact terminology used. Figures presented as to proportions of pig iron inputs in iron and steel production may become confusing unless the distinctions between ore and pig iron and the various types of iron and steel production are kept in mind.

Table 13 lists the raw steel production in the United States since 1966 and the amount of pig iron (made primarily from iron ores) and scrap consumed in this production. (Total iron ore consumption is shown in table 1 of part 1(A)(1).) The proportion of iron ores consumed has remained relatively constant at between 52 and 56 percent of the metallic charge.

Table 14 again shows the total amounts of raw steel produced as well as the amounts of steel shipped and the net tons of iron ore and scrap consumed per net ton of raw steel. It should be noted that for the last 2 years shown, 1972 and 1973, the number of net tons of iron ore consumed per net ton of raw steel is below the 12-year average and the number of net tons of scrap consumed per net ton of raw steel is above the 12-year average.

Table 15 shows the total amounts of pig iron produced and serves to explain the content of the pig iron used in steel production. It should be noted that the phrase "hot metal" utilized in later sections of the report refers to pig iron in its molten stage. As shown in the table, the proportion of ore used in blast furnaces to produce pig iron has also remained relatively constant at around 95.5 percent.

TABLE 13

Raw steel production and consumption of pig iron and scrap in U.S. steelmaking furnaces[1]
(Thousands of net tons)

Year	Raw steel production[2]	Pig iron consumption	Scrap consumption	Proportion of pig iron	Proportion of scrap
1973	150,799	94,935	82,467	53.5	46.5
1972	133,241	84,032	73,415	53.4	46.6
1971	120,443	74,235	63,694	53.8	46.2
1970	131,514	81,047	69,323	53.9	46.1
1969	141,262	84,178	76,641	52.3	47.7
1968	131,462	80,247	70,026	53.4	46.7
1967	127,213	82,850	65,422	55.9	44.1
1966	134,101	86,545	70,127	55.2	44.8

[1] Excludes production by manufacturers who produce only steel castings.

[2] Due to process losses, the summation of pig iron consumption and scrap consumption does not equal raw steel production.

Source: Steel production: Table 1A.
Others from: Table 44.
Annual Statistical Report, American Iron & Steel Institute, Washington, D.C., 1973.

TABLE 14

Consumption of iron ore and scrap in steel production[1]

Year	Steel industry in the USA[2]			
	Thousands of net tons		Net tons per NT raw steel	
	Raw steel produced	Steel shipped	Iron ore consumption	Scrap consumption
1973	150,799	111,430	1.016	0.542
1972	133,241	91,805	1.008	0.534
1971	120,443	87,038	1.013	0.529
1970	131,514	90,798	1.049	0.527
1969	141,262	93,877	1.019	0.543
1968	131,462	91,856	1.026	0.533
1967	127,213	83,897	1.047	0.514
1966	134,101	89,995	1.064	0.523
1965	131,462	92,666	1.063	0.531
1964	127,076	84,945	1.075	0.522
1963	109,261	75,555	1.065	0.536
1962	98,328	70,552	1.099	0.520
12-year average	128,014	88,701	1.093	0.530

[1] Includes ore consumed in blast furances, steel-producing furnaces, and agglomeration plants.

[2] Source: American Iron and Steel Institute Annual Statistical Report.

TABLE 15

Pig iron production and the consumption of scrap in U.S. blast furnaces[1]
(Thousands of net tons)

Year	Pig iron[2] production	Scrap consumed	Scrap consumed as percent of pig iron produced	Iron ores consumed as a percent of pig iron produced
1973	100,837	4,344	4.31	95.69
1972	88,942	3,743	4.21	95.79
1971	81,299	3,493	4.30	95.70
1970	91,435	4,120	4.51	95.49
1969	95,017	4,578	4.82	95.18
1968	88,780	4,055	4.57	95.43
1967	86,984	4,218	4.85	95.15
1966	91,500	4,740	5.18	94.82

[1] Excluding ferroalloys.

[2] Source: Table 30.

Annual Statistical Report, American Iron & Steel Institute, Washington, D.C., 1973.

Table 16 summarizes the average price per net ton of both pig iron and iron ore in the period from 1966 to 1973. The price for iron ore is the price per net ton f.o.b. at the mine. The price for pig iron is the average price of pig iron shipments, including pig iron transferred directly to steel furnaces located at the same site as the pig iron production facilities. The figures shown indicate that the average price for iron ore has increased by 34.9 percent since 1966. Pig iron prices increased by 38.5 percent in the same period.

The shipments of castings from iron and steel foundries and the pig iron and scrap consumed in producing the castings is shown in table 17. Ore usage (pig iron) by the foundry industry steadily decreased between 1966 and 1971 and increased in 1972 and 1973. In 1973 ore accounted for 11.3 percent of the metallic input of castings.

Total iron ore consumption figures from foreign sources have been presented in part I(A)(1).

TABLE 16

Average price of iron ore and pig iron
(Dollars per net ton)

Year	Iron ore[1]	Pig iron[2]
1973	11.43	78.16
1972	10.86	77.38
1971	10.31	70.23
1970	9.64	64.99
1969	9.23	58.43
1968	9.12	56.89
1967	8.86	57.20
1966	8.47	56.45

[1] Average price f.o.b. at the mine.

[2] Average price of pig iron shipments, including pig iron transferred directly to steel furnaces at the same site.

Source: 22-28 and Iron Age, January 7, 1974.

TABLE 17

Iron and steel foundry shipments

Year	Shipments[1]	Pig iron consumed[2]	Scrap consumed[2]	Proportion of scrap consumed	Proportion of ores consumed
	(thousand net tons)				
1973	[3]19,970	[4]2,683	[4]21,122	88.7	11.3
1972	17,870	[4]2,194	[4]19,956	90.1	9.9
1971	16,269	1,953	17,948	90.2	9.8
1970	16,529	2,251	16,236	87.8	12.2
1969	18,984	3,016	18,175	85.8	14.2
1968	17,858	2,883	17,034	85.5	14.5
1967	17,225	3,927	18,181	82.2	17.8
1966	19,004	4,565	19,707	82.0	18.0

[1] Source: Department of Commerce, Bureau of the Census.

[2] Source: 22-28.

[3] Estimate.

[4] Mineral Industry Survey, Final 1973 Statistics, April, 1974.

Part I(B)(2): Locations of demand.

Steelmaking in the United States is concentrated in only a few areas of the country. Historically, the location of steelmaking facilities has depended upon the location of and access to raw materials such as iron ore, scrap, and coal.

Table 18 summarizes the production of raw steel by State. Raw steel is defined as steel in its first solid state after refining in the steelmaking furnace. Nine States account for nearly 87 percent of the raw steel production each year.

Table 19 shows the number of blast furnaces by State. Those furnaces "in blast" were the ones that were producing hot metal; the remainder were idle or under repair. The blast furnace distribution also gives an indication of the basic oxygen furnace (BOF) distribution since the BOF requires hot metal in its operation. We note that while the total number of blast furnaces has declined by 21 since the end of 1968, the number in blast increased by 41 from the end of 1971 to the end of 1973.

Iron and steel foundries are located in nearly every State. However, foundry production, like steelmaking, is highly concentrated in only a few States. Table 20 shows the shipments of castings by State in 1971 and 1972. Ten States, New York, Pennsylvania, Ohio, Indiana, Illinois, Michigan, Wisconsin, Alabama, Tennessee, and Texas, accounted for 83.5 percent of all shipments of gray and ductile iron castings and 73.3 percent of all shipments of steel castings in 1972.

Of particular interest are the figures shown in table 21 of State and regional consumption of pig iron and scrap.

TABLE 18

Raw steel production by State
(Thousands of net tons)

State	Production					
	1973	1972	1971	1970	1969	1968
Pennsylvania	33,925	30,416	27,655	30,031	32,791	31,018
Ohio	26,510	23,851	20,064	21,684	24,203	22,606
Indiana	23,622	21,268	17,307	18,528	19,386	17,911
Illinois	13,428	12,152	10,897	11,738	11,873	10,510
Michigan	10,945	9,380	9,069	9,549	10,036	9,218
Maryland[1]	7,612	6,224	6,947	8,296	8,949	8,025
Alabama[2]	4,860	4,812	4,535	5,044	5,115	4,611
New York	6,401	4,114	4,321	4,824	7,522	7,228
California	4,479	3,562	3,595	4,008	4,244	4,210
Other	19,017	17,462	16,053	16,814	17,144	16,125
Total	150,799	133,241	120,443	131,514	141,262	131,462

[1] Includes small amounts produced in Connecticut, Delaware, New Jersey, and Rhode Island.
[2] Includes small amounts produced in Arkansas, Mississippi, and Tennessee.
Source: (3).

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TABLE 19

Number of blast furnaces by State as of December 31

States	1973		1972		1971		1970		1969		1968	
	In Blast	Total	In Blast	Total	In Blast	Total	In Blast	Total	In Blast	Total	In Blast	Total
Alabama	8	11	9	17	8	16	11	19	12	19	9	18
California	4	4	4	4	4	4	4	4	4	4	4	4
Colorado	4	4	4	4	4	4	4	4	4	4	4	4
Illinois	14	15	10	17	13	19	13	19	14	18	13	18
Indiana	25	26	21	26	18	25	21	25	21	25	20	24
Kentucky	2	2	2	2	2	2	2	2	2	3	2	3
Maryland	10	10	7	10	4	10	8	10	8	10	7	10
Michigan	9	9	8	9	8	9	9	9	9	9	8	9
Minnesota	------	2	------	2	1	2	1	2	1	2	1	2
New York	10	13	8	14	6	15	9	15	12	15	12	15
Ohio	31	42	29	43	22	43	27	44	31	46	27	47
Pennsylvania	36	54	32	55	26	55	33	55	41	56	35	58
Tennessee	------	------	------	------	------	------	------	------	------	3	------	3
Texas	2	2	1	2	1	2	2	2	2	2	2	2
Utah	3	3	2	3	2	3	3	3	2	3	2	3
West Virginia	4	4	4	4	4	4	3	4	4	4	4	4
Total	164	203	[1]141	212	[2]123	213	[1]150	217	[2]167	223	[3]150	224

[1] In addition, there were two furnaces producing ferroalloys.

[2] In addition, there were three furnaces producing ferroalloys.

[3] In addition, there were four furnaces producing ferroalloys.

Source: 3 1973.

TABLE 20

Shipments of iron and steel castings, and production of steel ingots, by geographic areas: 1972 and 1971
(Thousand short tons)

Division and State	Gray and ductile (nodular) iron castings		Malleable iron castings		Steel castings[3]		Production of raw steel[1]	
	1972	1971	1972	1971	1972	1971	1972	1971
United States, Total	15,328	13,839	961	882	1,596	1,579	133,241	120,443
New England	108	154	14	15	(D)	(D)	(D)	(D)
Maine	1	1	3	7	-----	-----	-----	-----
New Hampshire	-----	-----			(D)	(D)	-----	-----
Vermont	7	11			-----	-----	-----	-----
Massachusetts	57	84			(D)	(D)	-----	-----
Rhode Island	22	34			-----	-----	(D)	(D)
Connecticut	21	24	11	8	11	(D)	(D)	(D)
Middle Atlantic	2,877	2,782	128	118	317	338	(D)	(D)
New York	669	691	18	20	86	76	4,114	4,321
New Jersey	397	399			4	5	(D)	(D)
Pennsylvania	1,811	1,692	110	98	227	257	30,416	27,655
East North Central	7,658	6,664	744	673	703	692	66,651	57,337
Ohio	2,350	1,871	143	137	238	226	23,851	20,064
Indiana	959	904	39	36	51	62	21,268	17,307
Illinois	1,227	1,059	103	98	231	244	12,152	10,897
Michigan	2,695	2,374	412	352	57	42	9,380	9,069
Wisconsin	427	456	47	50	126	118	-----	-----
West North Central	544	554	25	14	166	164	(D)	(D)
Minnesota	116	132	25	14	(D)	(D)	(D)	(D)
Iowa	325	286			(D)	(D)	-----	-----
Missouri	80	104			51	59	(D)	(D)
Nebraska	23	32			(D)	(D)	-----	-----
Kansas					(D)	(D)	-----	-----
South Dakota	-----	-----			(D)	(D)	-----	-----

See footnotes at end of table.

Shipments of iron and steel castings, and production of steel ingots, by geographic areas: 1972 and 1971—Continued
(Thousand short tons)

Division and State	Gray and ductile (nodular) iron castings		Malleable iron castings		Steel castings[1]		Production of raw steel[1]	
	1972	1971	1972	1971	1972	1971	1972	1971
South Atlantic	442	424	(D)	(D)	38	37	(D)	(D)
Delaware	-----	-----	-----	-----	(D)	(D)	(D)	(D)
Maryland	78	75	-----	-----	(D)	(D)	(D)	(D)
Virginia	204	194	-----	-----	9	7	5,562	4,601
West Virginia			(D)	(D)	9	7		
North Carolina	111	103	(Z)	(Z)	-----	-----		
South Carolina	26	25	-----	-----	-----	-----		
Georgia	18	22	-----	-----	(D)	(D)		
Florida	5	5	-----	-----	(D)	(D)		
East South Central	2,457	2,050	(D)	(D)	98	80	7,275	6,826
Kentucky	293	229	-----	-----	-----	-----	2,463	2,291
Mississippi	-----	-----	-----	-----	-----	-----		
Alabama	1,744	1,632	(D)	(D)	98	80	[2]4,812	[2]4,535
Tennessee	420	189	-----	-----				
West South Central	539	499	(D)	(D)	68	r68	(D)	(D)
Arkansas	-----	-----	-----	-----	12	19	([2])	([2])
Louisiana	35	30	-----	-----			-----	-----
Oklahoma			-----	-----	56	r49	(D)	(D)
Texas	504	469	(D)	(D)			(D)	2,849
Mountain	313	255	(D)	(D)	(D)	(D)	([3])	([3])
Montana	104	90	-----	-----	-----	-----	-----	-----
Colorado			-----	-----	(D)	(D)	(D)	(D)
Arizona	209	165	-----	-----	(D)	(D)	(D)	(D)
Utah			-----	-----	(D)	(D)	(D)	(D)
Nevada	-----	-----	(D)	(D)	(D)	(D)	-----	-----

See footnotes at end of table.

Shipments of iron and steel castings, and producting of steel ingots, by geographic areas: 1972 and 1971—Continued
(Thousand short tons)

Division and State	Gray and ductile nodular) iron castings		Malleable iron castings		Steel castings[2]		Production of raw steel[1]	
	1972	1971	1972	1971	1972	1971	1972	1971
Pacific	390	457	(D)	(D)	119	120	[3]8,156	[3]7,848
Washington	10	14	(D)	(D)	24	21	(D)	(D)
Oregon			------	------	34	32	(D)	(D)
California	380	443	------	------	61	67	3,652	3,595
Hawaii	------	------	------	------	------	------	(D)	(D)

Note: Since these estimates are based on a sample survey, they are subject to sampling variability. The relative standard errors for gray iron castings are listed in the appendix. The relative standard errors are 1 percent or less for all other estimates in this table. Data on production of raw steel represent essentially complete coverage.

-Represents zero.

(D) Withheld to avoid disclosing figures for individual companies. This detail figure is included, however, in the appropriate subtotals and totals in the table. In some cases figures which are otherwise publishable are withheld to avoid indirect disclosure by subtraction from higher-level totals or from related figures.

rRevised.

(Z) Less than 500 short tons.

[1] Source: American Iron and Steel Institute.

[2] Data for Arkansas are included with Mississippi, Alabama, and Tennessee.

[3] Data for the Mountain and Pacific Divisions are combined.

Source: Current Industrial Reports M33a(72)-13, U.S. Department of Interior, Bureau of Mines, April, 1974.

TABLE 21

Production of pig iron and consumption of iron and steel scrap and pig iron, by geographic areas: 1972 and 1971
(Thousand short tons)

Division and State	Pig iron production[1]		Consumption			
			1972		1971	
	1972	1971	Scrap	Pig iron	Scrap	Pig iron
United States, Total	88,940	80,918	93,371	89,140	82,567	81,178
New England	------	------	355	45	336	46
Maine and New Hampshire	------	------	12	5	29	6
Vermont	------	------	97	22	75	17
Massachusetts	------	------	133	4	120	5
Rhode Island	------	------	113	14	112	18
Connecticut	------	------				
Middle Atlantic	24,354	23,036	20,699	24,591	19,132	23,176
New York	3,998	4,196	2,452	3,660	2,490	3,789
New Jersey	------	------	651	58	623	
Pennsylvania	20,356	18,840	17,596	20,873	16,019	19,387
East North Central	45,819	39,933	46,449	45,981	39,832	39,855
Ohio	16,363	13,675	15,594	16,108	13,630	13,401
Indiana	15,330	12,696	10,728	15,118	8,763	12,776
Illinois	[2]14,126	[2]13,562	9,402	7,109	8,162	6,376
Michigan	([2])	([2])	9,819	7,527	8,507	7,185
Wisconsin	------	------	906	119	770	117
West North Central	([3])	([3])	2,446	86	2,487	413
Minnesota	([2])	([2])	2,446	86	620	394
Iowa	------	------			574	
North Dakota and South Dakota	------	------			------	------
Missouri	------	------			1,293	19
Nebraska	------	------				
Kansas	------	------				

See footnotes at end of table.

Production of pig iron and consumption of iron and steel scrap and pig iron, by geographic areas: 1972 and 1971—Continued
(Thousand short tons)

Division and State	Pig iron production[1]		Consumption			
			1972		1971	
	1972	1971	Scrap	Pig iron	Scrap	Pig iron
South Atlantic	6,967	7,164	6,919	7,151	6,242	7,363
Maryland	6,967	7,164	6,919	7,151	5,052	7,338
Delaware						
Virginia						
West Virginia						
North Carolina					1,190	25
South Carolina						
Georgia						
Florida						
East South Central	7,056	(3)	6,500	5,442	5,485	5,151
Kentucky	(4)	(4)	1,679	1,729	1,378	1,611
Mississippi	----------	----------			714	95
Tennessee	----------	----------	1,002	85		
Alabama	[4]7,056	[4]6,287	3,819	3,628	3,393	3,445
West South Central	(3)	(3)	4,094	1,154	3,367	641
Arkansas	----------	----------	4,094	1,154	350	5
Louisiana	----------	----------				
Oklahoma	----------	----------			3,017	636
Texas	(4)	(4)				
Mountain	4,744	4,498	[6]5,909	[6]4,690	2,217	[5]4,533
Arizona	----------	----------	[6]5,909	[6]4,690	2,217	[5]4,533
Colorado	[5]4,744	[5]4,498				
Utah	(5)	(5)				
Montana, Nevada	----------	----------				

See footnotes at end of table.

Production of pig iron and consumption of iron and steel scrap and pig iron, by geographic areas: 1972 and 1971—Continued
(Thousand short tons)

Division and State	Pig iron production[1]		Consumption			
			1972		1971	
	1972	1971	Scrap	Pig iron	Scrap	Pig iron
Pacific	([3])	([3])	([6])	([6])	3,469	([3])
Washington	-	-	([6])	([6])	3,469	-
Oregon	-	-				-
California	([5])	([5])				([5])
Hawaii	-	-				-

Note: Data are subject to sampling variability (see appendix). Detail may not add to totals due to independent rounding.

-Represents zero.

[1] Excludes silvery pig iron.

[2] Data for Illinois includes Michigan and Minnesota.

[3] Included in United States total.

[4] Data for Alabama includes Kentucky and Texas.

[5] Data for Colorado and Utah includes California.

[6] Data for Mountain Division includes Pacific Division.

Source: Current Industrial Reports M33a(72)-13, U.S. Department of Interior, Bureau of Mines, April, 1974.

Only five States, Pennsylvania, Ohio, Indiana, Illinois, and Michigan, consumed 63,139,000 net tons of scrap in 1972 or 67.6 percent of total U.S. consumption. These same States consumed 66,735,000 net tons of pig iron in the same year or 74.9 percent of total U.S. consumption.

A breakdown of total consumption by type of furnace shows the following figures for 1972:

TABLE 22

Consumption of Scrap and Iron Ore by Type of Furnace

Type of furnace	Scrap	Pig Iron[1]
	Thousand net tons	
Cupola	15,544	2,264
Electric	30,459	961
Open-hearth	18,824	22,375
Basic oxygen	24,192	60,232
Blast	3,565	--------
Air and other	787	394
	93,371	86,226

[1] Excludes molten pig iron used for ingot molds and direct casting.

The location of steel mills in the United States is shown in map 2. As noted, five States consume the vast bulk of scrap iron and steel and iron ores. These States have been shaded on the map. The economic necessity of positioning plants close to the source of supply of raw materials is exemplified by the geographic concentration of steelmaking facilities. For convenience, a State-by-State listing of the locations of steel mills is also included in table 23.

MAP 2

LOCATION OF STEEL MILLS IN THE UNITED STATES

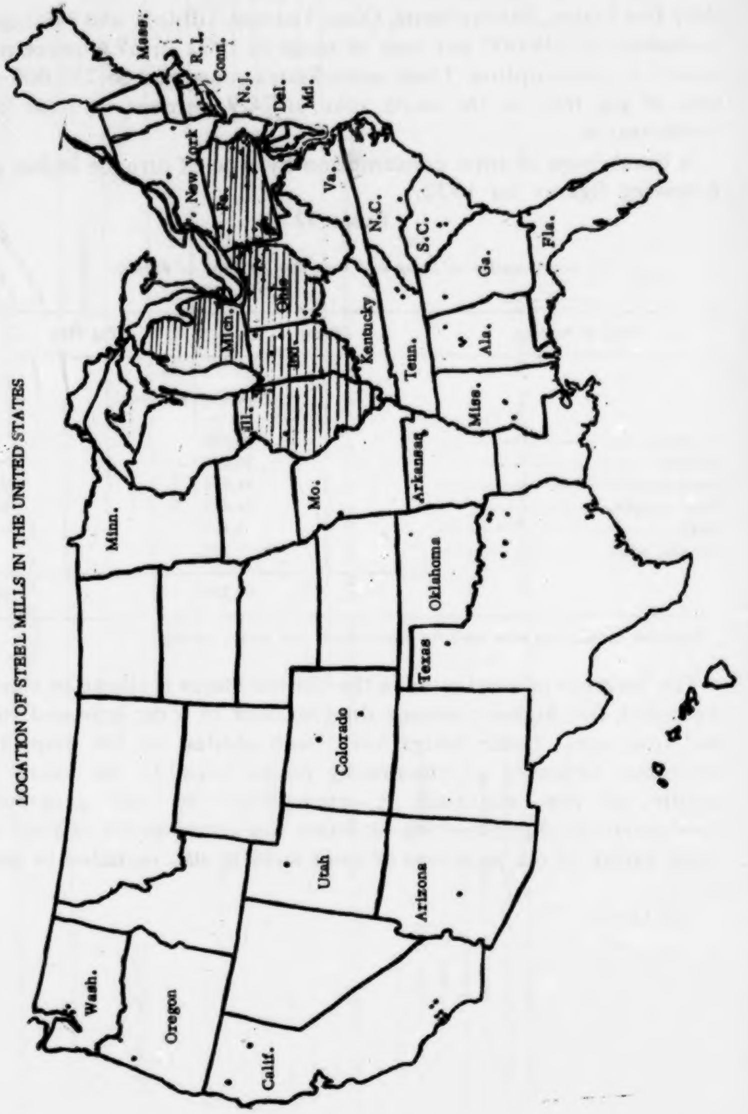

Mass.
R.I.
Conn.
N.J.
Del.
Md.
New York
Pa.
Va.
N.C.
S.C.
Fla.
Ga.
Ohio
Mich.
Ind.
Kentucky
Tenn.
Ala.
Miss.
Ill.
Arkansas
Mo.
Minn.
Oklahoma
Texas
Colorado
Utah
Arizona
Wash.
Oregon
Calif.

TABLE 23

Location of steel mills in the United States

- Alabama
  - Birmingham
  - Fairfield
  - Gadsden

- Arizona
  - Tempe

- Arkansas
  - Newport

- California
  - Emeryville
  - Etiwanda
  - Fontana
  - Long Beach
  - Los Angeles
  - Oakland
  - San Francisco
  - Torrance

- Colorado
  - Denver
  - Pueblo

- Connecticut
  - Bridgeport

- Delaware
  - Claymont

- Florida
  - Tampa

- Georgia
  - Atlanta

- Hawaii
  - Honolulu

- Illinois
  - Alton
  - Chicago
  - Chicago Heights
  - Granite City
  - Kankakee

- Illinois—Continued
  - Lemont
  - Morton Grove
  - Peoria
  - South Chicago
  - Sterling

- Indiana
  - Chesterton
  - East Chicago
  - Fort Wayne
  - Gary
  - Kokomo
  - New Castle

- Kentucky
  - Ashland
  - Newport
  - Owensboro

- Maryland
  - Baltimore
  - Sparrows Point

- Massachusetts
  - Boston

- Michigan
  - Dearborn
  - Detroit
  - Ecorse
  - Ferndale
  - Trenton
  - Warren

- Minnestoa
  - Duluth
  - St. Paul

- Mississippi
  - Flowood
  - Jackson

- Missouri
  - Kansas City
  - St. Louis

- New York
  - Buffalo
  - Dunkirk
  - Lackawanna
  - Lockport
  - New Hartford
  - North Tonawanda
  - Syracuse
  - Watervliet

- New Jersey
  - Roebling

- North Carolina
  - Croft
  - Monroe

- Ohio
  - Campbell
  - Canton
  - Cincinnati
  - Cleveland
  - Lorain
  - Mansfield
  - Marion
  - Massillon
  - Middletown
  - Portsmouth
  - Steubenville
  - Warren
  - Youngstown

- Oklahoma
  - Sand Springs

- Oregon
  - McMinnville
  - Portland

- Pennsylvania
  - Aliquippa
  - Beaver Falls
  - Bethlehem
  - Brackenridge
  - Braddock

Location of steel mills in the United States—Continued

Pennsylvania—Continued
- Braeburn
- Bridgeville
- Burnham
- Butler
- Carnegie
- Coatesville
- Duquesne
- Erie
- Fairless Hills
- Farrell
- Harrisburg
- Houston
- Irvine
- Ivy Rock
- Johnstown
- Latrobe
- McKeesport
- Midland
- Milton
- Monaca
- Monessen
- Munhall
- New Castle
- Oakmont
- Philadelphia
- Phoenixville

Pennsylvania—Con.
- Pittsburgh
- Reading
- Sharon
- Steelton
- Titusville
- Washington
- West Homestead

Rhode Island
- Phillipsdale

South Carolina
- Cayce
- Columbia
- Georgetown

Tennessee
- Harriman
- Knoxville

Texas
- Daingerfield
- Dallas
- El Paso
- Fort Worth
- Houston

Texas—Con.
- Lone Star
- Longview
- Pampa
- Sequin
- Vinton

Utah
- Geneva

Virginia
- Chesapeake
- Gilmerton
- Newport News
- Roanoke

Washington
- Seattle

West Virginia
- Huntington
- Weirton
- Wheeling

Part I(B)(3): Iron and steelmaking operations.

Background.—Steel may be produced either by reducing iron ore to iron and then refining the iron into steel or by the melting and refining of iron and steel scrap.

Iron, generally, is just an intermediate product of steelmaking. Most, but not all iron, is refined into steel. Some iron, however, is used by foundries to produce cast iron and cast steel.

Steel production generally consists of four stages:

(a) Preparation of raw materials.

(b) Reduction of iron ore to hot metal (or pig iron) in a blast furnace.

(c) Refining of the hot metal into raw steel (or the melting and refining of scrap into raw steel).

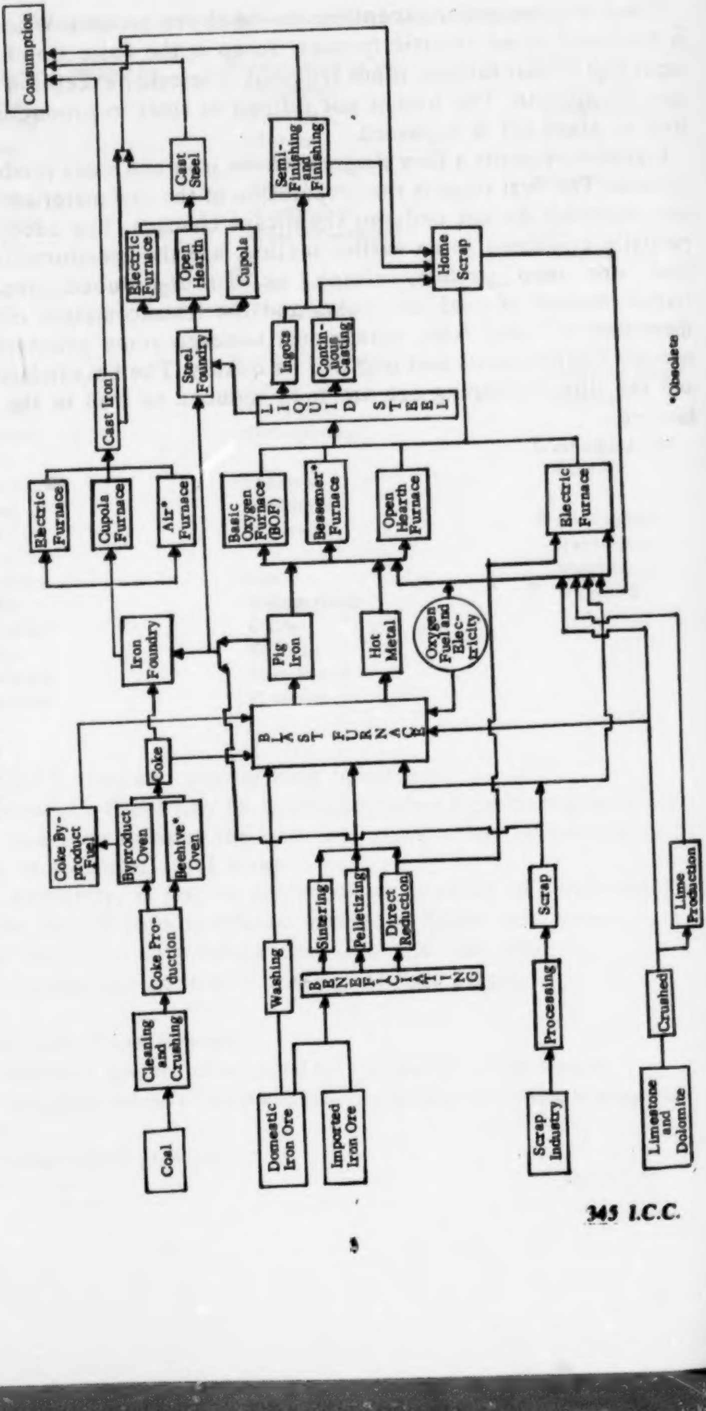
(d) Forming of steel products.

There are two major exceptions to the above process. When steel is produced in an electric furnace, scrap is the basic iron-bearing input and a blast furnace is not required. The other exception is cast iron production. The iron is not refined to steel in producing cast iron so stage (c) is bypassed.

Figure 4 presents a flow diagram of the iron and steel production process. The first stage is the preparation of the raw materials. Most raw materials do not undergo significant changes. The exceptions, partially explained in an earlier section, are the transformation of iron ore into pellets, sinter, or direct-reduced ore, the transformation of coal into coke, and the transformation of some limestone to lime. Also, scrap must undergo some processing to remove contaminants and improve its quality. The beneficiated ore and the direct-shipping ore are then reduced to iron in the blast furnace.

FIGURE 4

FLOW DIAGRAM OF STEELMAKING PROCESS


Coal
Cleaning and Crushing
Coke Production
Byproduct Oven
Beehive* Oven
Coke By-product Fuel
Coke
Iron Foundry
Electric Furnace
Cupola Furnace
Air* Furnace
Cast Iron
Steel Foundry
Electric Furnace
Open Hearth
Cupola
Cast Steel
Consumption
Domestic Iron Ore
Imported Iron Ore
Washing
BENEFICIATING
Sintering
Pelletizing
Direct Reduction
BLAST FURNACE
Pig Iron
Hot Metal
Oxygen Fuel and Electricity
Basic Oxygen Furnace (BOF)
Bessemer* Furnace
Open Hearth Furnace
LIQUID STEEL
Ingots
Continuous Casting
Semi-Finishing and Finishing
Home Scrap
Electric Furnace
Scrap Industry
Processing
Scrap
Limestone and Dolomite
Crushed
Lime Production

*Obsolete

The blast furnace outputs are hot metal and/or pig iron. The pig iron is produced primarily for use in foundries where it is made into cast iron or cast steel. Only a very small percent of the pig iron is used to make steel. The hot metal, on the other hand, is used almost exclusively in steel production.

The hot metal and varying proportions of scrap are next put into either the open-hearth furnace or the basic oxygen furnace to be refined into raw steel. This refining process is directed toward removing carbon from the hot metal and adding appropriate alloying materials. If the electric furnace is being used to produce raw steel, the blast furnace and coking operations are bypassed since scrap is used almost exclusively to produce raw steel. (There are some instances in which some hot metal is used along with scrap in an electric furnace, but this not typical.)

The raw steel produced by the three steelmaking furnaces is then formed into steel products. A small percentage is also formed into cast steel. The process for forming steel products is independent of whether the raw steel was formed from scrap or ore and, as a result, this process is not of concern in this subnumbered proceeding with but one exception. This exception is in the production of the semifinished product. The raw steel may either be poured into ingots to solidify and then rolled into a semifinished form or it may be cast directly into the semifinished form by the process of continuous casting. Continuous casting produces less waste (and consequently less home scrap) than the forming of ingots. As a result, steelmaking with continuous casting would require more purchased scrap than steelmaking with conventional ingot casting if the scrap/ore ratios remain constant. Thus, the use of continuous casting or ingot casting alternatives can effect the amount of scrap required to be purchased, and, as a result, these two processes are considered in this subnumbered proceeding.

Blast furnace.—The blast furnace is used to smelt iron-bearing materials, such as iron ore, sinter, pellets, mill scale and scrap, into hot metal or pig iron. Iron-bearing materials, coke and limestone or dolomite, are charged into the top of the furnace and heated air and, in some instances, fuel is blown in at the bottom. As the hot air rises, it preheats the coke so that when the coke descends to the lower portions of the furnace it burns with very high intensity. The combustion of the coke produces heat and carbon monoxide which rise to preheat and reduce the iron-bearing materials as they descend in the furnace. The molten iron settles to the bottom of the furnace. The limestone or dolomite forms a molten slag which floats on top of the molten iron. Oxygen, natural gas, oil, or powdered coal may be injected at the bottom of the furnace to increase temperatures and speed up the reduction process.

After the slag is drawn off, the hot metal is trapped and transferred to an open-hearth or BOF for refining. Some hot metal is formed into merchant pig iron which is sold to foundries or to steel mills which do not have blast furnaces or sufficient blast furnace capacity.

Table 24 presents the consumption of raw materials and other inputs and the production of scrap per net ton of hot metal produced in a blast furnace. The use of agglomerates, fuel oil and oxygen has increased significantly since 1966. Iron ore, scrap mill cinder, scale, limestone, coke, and natural gas use has all decreased. The amount of scrap consumed per net ton of pig iron has remained relatively constant.[6]

TABLE 24

Raw material consumption and scrap production per net ton of pig iron produced

Raw material	Units	1972	1971	1970	1969	1968	1967	1966
Iron ore	Net tons	0.39	0.41	0.42	0.45	0.49	0.49	0.52
Agglomerates[1]	---do---	1.22	1.18	1.16	1.12	1.12	1.07	1.01
Scrap[2]	---do---	0.04	0.05	0.06	0.05	0.05	0.05	0.06
Mill cinder, scale, et cetera	---do---	0.05	0.06	0.06	0.06	0.06	0.06	0.06
Limestone and dolomite[3]	---do---	0.14	0.16	0.15	0.15	0.15	0.17	0.18
Coke[1]	---do---	0.61	0.63	0.63	0.63	0.62	0.63	0.64
Natural gas	Cubic feet	414	461	486	467	524	509	563
Fuel oil	Gallons	3.24	2.39	1.60	1.23	0.91	0.8	0.6
Oxygen	Cubic feet	174	164	148	96	75	100	99
Scrap produced	Net tons	0.015	0.013	0.022	0.011	0.012	0.015	0.014

[1] Based on total material charged less products recovered.

[2] Calculated from data in 22-27.

[3] Does not include flux contained in the agglomerates.

Source: 2 and 3

Blast furnace technology will remain essentially unchanged over the near term. Output per individual blast furnace has been increasing in recent years but this is due primarily to the use of larger furnaces, to the increased use of beneficiated ore and to high temperatures in the blast furnace rather than to any major technological change.

---

[6] Alan Wood Steel Company states that scrap cannot be used in its blast furnaces.

The trends noted above in regard to increases and decreases in consumption of various raw materials are due primarily to pellets and other agglomerates replacing iron ore, sinter, coke, and limestone; and oxygen enrichment and fuel oil injection replacing natural gas use and decreasing the coke requirements.

Table 25 presents, for the near term, the typical blast furnace consumption of raw materials per net ton of hot metal produced. These consumption figures have been obtained by extrapolating current trends to 1975. The total amount of iron ore and agglomerates input to the blast furnace has remained relatively constant at around 1.6 net tons per ton of hot metal. By 1975 it is estimated that pellets will account for 51 percent of the ore and agglomerate input.

In the long run, blast furnace technology will be affected primarily by the possible substitution of prereduced materials for iron ore and agglomerates. If the use of prereduced materials becomes widespread in blast furnace operations, there will be significant changes in the blast furnace technology. Otherwise, except for a continuation of some of the current trends, there will probably be very little change in blast furnace procedures. There currently are trends toward building superlarge blast furnaces, making higher basicity sinter and utilizing higher top pressure, higher blast temperatures and injected fuels.

Two possible production functions are described below.

TABLE 25

Typical raw material consumption per ton of pig iron production in the near term

Raw material	Units	Amount
Iron ore[1]	Net tons	0.36
Agglomerates[1]	---do---	1.24
Scrap[1]	---do---	0.04
Mill cinder, scale, et cetera[1]	---do---	0.05
Limestone and dolomite[1]	---do---	0.14
Coke[1]	---do---	0.60
Natural gas[1]	Cubic feet	395
Fuel oil[1]	Gallons	6.40
Oxygen[1]	Cubic feet	185
Electricity[2]	KWHR	16
Coke oven gas[2]	10^6 BTU	0.05
Labor[2]	Manhours	0.39

Typical raw material consumption per ton of pig iron production in the near term—Continued

Byproducts	Units	Amount
Scrap generated[1]	Net tons	0.015
Slag[1]	---do---	0.29
Blast furnace gas[2]	10^6 BTU	5735
Coke Breeze[2]	10^6 BTU	0.29
Flue Dust[3]	Net tons	0.04

[1] Based on table 24.

[2] Source: 15

[3] Source: 12

The first illustrates the cost of continuing with present technology and not introducing prereduced materials to the blast furnace. The second depicts the case of complete substitution of prereduced materials for iron ore and agglomerates.

By 1985 virtually all ore will be beneficiated before use in a blast furnace. Using agglomerates in the blast furnace will result in a lower requirement for coke, flux, and fuels. Table 26 gives the production function for a blast furnace using agglomerates and not using any iron ore. The use of oxygen, fuel oil, and natural gas has been held at 1975 levels due to current questions about the true value of these inputs. There is discussion about whether the increased use of these three inputs is economically worthwhile.

At present the use of prereduced pellets in a blast furnace is still in the experimental stage. Tests have indicated that a 100-percent prereduced pellet charge can increase blast furnace productivity by 75 percent and cut coke usage by 50 percent compared to using a 100-percent agglomerate charge. The economic feasibility of the process is still in question however. Two studies have shown that the use of prereduced pellets could be more profitable to the steel industry than the use of any other iron-bearing material. Further study is still required before a definite answer can be given on economic feasibility. Currently, there are no major efforts by the steel industry to commence testing of prereduced pellets on a plant scale.

Table 27 presents a production function for a blast furnace using a 100-percent prereduced pellet charge. Data is not available on energy consumption other than coke use, so it was necessary to estimate the input of the other forms of energy.

TABLE 26

1985 raw material consumption per net ton of pig iron based upon current technology using only agglomerates[1]

Raw material	Units	Amount
Iron ore	Net tons	0
Agglomerates	do	1.60
Scrap	do	0.04
Mill cinder, scale, et cetera	do	0.05
Limestone and dolomite	do	0.11
Coke	do	[2]0.58
Natural gas	Cubic feet	[3]395
Fuel oil	Gallons	6.403
Electricity	KWHR	13
Coke oven gas	10^6 BTU	0.05
Oxygen	Cubic feet	[3]185
Labor	Manhours	.34
Byproducts produced		
Scrap generated	Net tons	0.015
Blast furnace gas	10^6 BTU	5,700
Coke breeze	do	0.29
Flue dust	Net tons	0.04
Slag	do	0.25

[1] Based on Table 25.

[2] Source: 14.

[3] Kept at near term levels due to uncertainty of their economic value.

TABLE 27

1985 raw material consumption per net ton of pig iron based upon a charge of all prereduced ore

Raw material	Units	Amount
Prereduced pellets	Net tons	0.93
Scrap	do	0.03
Mill cinder, scale, et cetera	do	0.05
Limestone and dolomite	do	0.17
Coke	do	0.28
Natural gas	Cubic feet	200
Fuel oil	Gallons	3.20
Electricity	KWHR	7
Coke oven gas	10^6 BTU	0.03
Oxygen	Cubic feet	93
Labor	Manhours	0.34
Byproducts		
Scrap generated	Net tons	0.015
Blast furnace gas	10^6 BTU	2,850
Coke breeze	do	0.15
Flue dust	Net tons	0.04
Slag	do	0.20

Source: 12.

Since coke use is cut in half and productivity increases by 75 percent, it was decided to use 50 percent of the energy consumption required for a 100-percent agglomerate charge. Byproduct fuel production was also reduced accordingly.

Steelmaking.—The three furnaces most commonly used to produce steel are the BOF, the open-hearth furnace, and the electric furnace. The first two are used predominantly to refine iron to steel. The electric furnace is used predominantly to transform scrap into steel.

As shown in table 29, the use of the BOF and the electric furnace have been steadily increasing while the use of the open-hearth furnace has been steadily decreasing. In 1970 the BOF surpassed the open hearth as the leading producer of raw steel. For 1975 and 1985 it is estimated that the furnaces will produce the following percentage of raw steel:

TABLE 28

Estimates of steel production by type of furnace

	1975	1985
	Percent	*Percent*
BOF	52.9	63.5
Open hearth	25.8	7.0
Electric	21.3	29.5

Raw steel production is estimated to be around 155 million net tons in 1975, and to be between 185 and 200 million net tons in 1985.

There are several new furnaces and processes which could affect steelmaking. However, substantial research and development is still necessary before any realistic evaluation can be made. Some examples of possible developments include: fuel-oxygen-scrap process, continuous counterflow steelmaking torrax melting system and direct steelmaking. These processes are not discussed because none of them is likely to be in use by 1985.

TABLE 29

Raw steel production by the various melting processes
(Thousands of net tons)

Year	Open hearth	Percent	BOF	Percent	Electric	Percent	Total
1973	39,780	26.4	83,260	55.2	27,759	18.4	150,799
1972	34,936	26.2	74,584	56.0	23,721	17.8	133,241
1971	35,559	29.5	63,943	53.1	20,941	17.4	120,443
1970	48,022	36.5	63,330	48.2	20,162	15.3	131,514
1969	60,894	43.1	60,236	42.6	20,132	14.3	141,262
1968	68,836	50.1	48,812	37.1	16,814	12.8	131,462

Source: American Iron and Steel Institute, Annual Statistical Report, 1973

Basic oxygen furnaces.—Hot metal, scrap, lime, and oxygen are the basic inputs to the BOF. The scrap is first charged into the bottom of the furnace. Immediately following this, hot metal is then ladled into the furnace. An oxygen lance is then lowered into the furnace and oxygen is blown in at supersonic speeds. While oxygen is blown in, lime is added as a flux.

No external heat sources are used in the BOF. The heat contained in the hot metal and that generated in the oxidation process is used to melt the scrap. The hot metal is capable of melting approximately one-third its weight in scrap. In fact, scrap use is essential to this process as a means of absorbing the heat generated in the oxidation of the impurities in the hot metal. Scrap (primarily home scrap) normally makes up 25-31 percent of the metallic charge and hot metal the remainder.[7]

A BOF is capable of producing up to a 410-ton batch of raw steel in about 45 minutes, with a yield of around 85-90 percent. The yield is a measure of the raw steel produced as a percent of the total metallics charged into the furnace.

Table 30 shows the raw material consumption per net ton of raw steel produced in a BOF. Yields range from 86.2 percent in 1966 (1.16 net tons of metallics used to produce 1 net ton of raw steel) to 90.9 percent in 1969.

TABLE 30

Raw material consumption per net ton of raw steel produced in the BOF

Raw materials	Units	1972	1971	1970	1969	1968	1967	1966
Hot metal[1]	Net tons	(3)	0.81	0.78	0.77	0.80	0.81	0.82
Scrap[1]	do	(3)	0.31	0.33	0.33	0.33	0.34	0.34
Lime[2]	do	0.08	0.08	0.08	0.08	0.07	0.07	0.07
Limestone[2]	do	0.006	0.006	0.007	0.007	0.008	0.009	0.006
Fluorspar[2]	do	0.005	0.006	0.006	0.006	0.006	0.006	0.006
Oxygen[2]	Cubic feet	1851	1896	1900	1895	1779	1900	1853

[1] Calculated based on data in 22-27.
[2] Calculated based on data in 2 and 3.
[3] Not available.

The use of lime as a flux has slowly increased from 1966 to 1972, while the use of limestone has decreased. In fact, the consumption of lime, limestone, fluorspars, and oxygen appears to be relatively insensitive to the scrap and hot metal mix over the range, of mixes in the table; 1970 and 1971 represent two extremes of the hot metal and scrap mix, yet the consumption of these four inputs remained almost constant. The decrease in limestone use in 1971 appears to be a continuing technologic trend.

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[7] Youngstown Sheet and Tube Company places this range at 26-32 percent and Armco Steel Corporation maintains that charges of 10-30 percent scrap are possible.

The proportion of scrap and hot metal charged in the BOF is shown in table 31. In the period from 1965 to 1972, the proportion of scrap used has ranged between 28.7 and 30.1 percent.

In the near term the technology of the BOF is not expected to change. However, there is interest in increasing the amount of scrap that the BOF can handle. Preheating the scrap is the most likely means of permitting an increase in scrap usage to 33-37 percent of the charge and a good amount of experimental work has been carried out in this area; however, any increase in scrap usage in the near term due to preheating will be negligible as a result of increased costs and reduced productivity inherent in the process.

Table 32 presents three typical production functions for the BOF in the near term. For a selected scrap to hot metal ratio, each production function gives the amount of raw materials input per net ton of raw steel produced. The scrap-to-hot-metal ratios have been selected to correspond to the high, middle, and low scrap-to-hot-metal ratios which have occurred during the last decade. It is believed that, in the near term, scrap usage will fall in this range. Each production function corresponds to a raw steel yield of 88 percent, which is the median yield of a BOF.

Scrap preheating and the Q-BOP (described below) are the two processes most likely to affect the BOF by 1985. Apart from these two processes, no other significant changes are foreseen. BOF technology both with and without scrap preheating is discussed below. This is followed by a discussion of the Q-BOP.

TABLE 31

Proportion of scrap and hot metal used in the BOF

Year	Scrap	Hot metal
1973	28.7	71.3
1972	28.7	71.3
1971	28.9	71.1
1970	30.1	69.9
1969	29.9	70.1
1968	29.1	70.9
1967	29.3	70.7
1966	29.0	71.0
1965	29.6	70.4

Source: 22-27

TABLE 32

Typical raw material consumption per net ton of raw steel products in the BOF in the near term

Raw material	Units	Scrap percentage		
		27.4	29.2	30.1
Hot metal[1]	Net tons	.82	.80	.79
Scrap[1]	do	.31	.33	.34
Lime[1]	do	0.08	0.08	0.08
Limestone[1]	do	0.006	0.006	0.006
Fluorspar[1]	do	0.006	0.006	0.006
Oxygen[1]	Cubic feet	1900	1900	1900
Labor[2]	Manhours	0.60	0.60	0.60
Byproducts				
Scrap generated[2]	Net tons	0.038	0.038	0.038
Slag[2]	do	0.13	0.13	0.13

[1] Based on Table 30.

[2] Source: 4.

If scrap preheating and the Q-BOP do not come into widespread use, BOF technology in 1985 will be very much the same as today. Since its introduction in 1955 there has been very little change in the BOF. There has been a slight increase in oxygen input and scrap input and substitution of burnt lime for limestone, but other than this, the process is unchanged.

Table 33 details the production function for the BOF in 1985. Scrap use is assumed to be at 30 percent, the upper limit used today. Lime is expected to continue to be substituted for limestone. No other changes are envisioned.

Since the BOF does not use any external fuels in normal operation, the amount of scrap it can melt is determined by the heat generated in the oxidation of impurities in the hot metal. By preheating the scrap before it is charged into the BOF, more scrap can be melted. At present, methods of scrap preheating are still very much in the experimental stage. Experiments indicate that the use of up to 50 percent scrap may be feasible with preheating. However, more experience is necessary before firm conclusions can be drawn.

Table 34 shows a likely production function for a BOF process using scrap preheating to accept a 40-percent scrap charge. Preheating of the scrap requires additional oxygen and fuel use. The decreased hot metal charge reduces flux and oxygen requirements. Overall oxygen and fuel use increases and flux use decreases when compared to a BOF without preheating.

TABLE 33

1985 production function for one net ton of raw steel production in BOF based upon current technology[1]

Raw material	Units	Amount
Hot metal	Net tons	0.79
Scrap	do	0.34
Lime	do	0.09
Limestone	do	0.005
Fluorspar	do	0.005
Oxygen	Cubic feet	1900
Labor	Manhours	0.60
Byproducts		
Scrap generated	Net tons	0.038
Slag	do	0.13

[1] Based upon tables 30 and 32.

TABLE 34

Production function for one net ton of raw steel production in a BOF with scrap preheating

Raw material	Units	Amount
Hot metal	Net tons	0.68
Scrap	do	0.45
Lime	do	0.08
Limestone	do	0.005
Fluorspar	do	0.005
Oxygen	Cubic feet	2388
Labor	Manhours	0.60
Natural gas	Cubic feet	390
Byproducts		
Scrap generated	Net tons	0.038
Slag	do	0.12

Source: 17.

The Q-BOP process is identical to the BOF process except that oxygen is fed in at the bottom of the furnace rather than at the top. This increases the heat available and allows up to 20 percent more scrap to be melted. Scrap use can thus increase from around 30 percent to 36 percent of the metallic charge.

Table 35 presents a likely production function for the Q-BOP process. The derivation of this production function is based upon the fact that the consumption of both oxygen and flux is proportional to the hot metal use in the BOF and that only negligible amounts of oxygen and flux are required for scrap.

Open-hearth furnaces.—Hot metal, scrap, limestone, oxygen, and heat are the basic inputs in open hearth steelmaking. Scrap and limestone are first charged into the hearth and are heated by a flame produced by burning fuel oil, tar, or gas. When the scrap is at the proper temperature, hot metal is added. Normally, oxygen is injected by lances to speed up the melting of the scrap. Five to eight hours are required to produce a typical batch of 350 tons of steel, with a yield of around 87-91 percent.

Although the open hearth is the most versatile of the commercialized steelmaking processes and is capable of operating with an all-scrap charge or an all-hot-metal charge, most are designed to use approximately equal proportions of both.[8] The most common charges range from 40-65 percent liquid blast furnace metal and 35-60 percent scrap.

The open-hearth furnace is slowly being phased out of steelmaking and is being replaced by the more efficient BOF.

Table 36 shows the raw material consumption per net ton of raw steel produced by the open-hearth furnace. Yields range from 84.8 percent in 1968 to 92.6 percent in 1971. This is slightly outside the expected range but the average yield for the 6-year period is 89.9 percent which falls almost in the center of the expected range. The use of lime, limestone, and fluorspar appears to be insensitive to the hot metal and scrap mix. Coke oven gas consumption has been decreasing while oxygen consumption has been increasing.

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[8] Armco Steel Corporation maintains that increasing the percentage of scrap input reduces productivity and Youngstown Sheet and Tube Company states that the mix used will depend in part on the availability of blast furnace metal and scrap and the prices of these commodities.

TABLE 35

Production function for one net ton of raw steel produced in a Q-BOP[1]

Raw material	Units	Amount
Hot metal	Net tons	0.72
Scrap	do	0.41
Lime	do	0.08
Limestone	do	0.005
Fluorspar	do	0.005
Oxygen	Cubic feet	1731
Labor	Manhours	0.60
Byproducts		
Scrap generated	Net tons	0.038
Slag	do	0.12

[1] Based upon Table 32 and Source 19.

TABLE 36

Raw material consumption per net ton of raw steel produced in the open hearth

Raw materials	Units	1972	1971	1970	1969	1968	1967	1966
Hot metal[1]	Net tons	([3])	0.66	0.66	0.62	0.61	0.66	0.65
Scrap[1]	---do---	([3])	0.52	0.46	0.50	0.47	0.46	0.45
Lime[2]	---do---	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Limestone[2]	---do---	0.002	0.04	0.04	0.04	0.04	0.04	0.06
Fluorspar[2]	---do---	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Oxygen[2]	Cubic feet	1242	1085	1075	964	838	826	736
Coke oven gas[2]	---do---	324	368	459	492	498	463	647
Natural gas[2]	---do---	1380	1308	1204	1518	1552	1216	1129
Tar, and pitch[2]	Gallons	3.35	3.12	3.68	3.38	3.31	3.51	3.52
Fuel oil[2]	---do---	8.75	8.40	8.68	8.29	8.35	8.03	8.49

[1] Calculated.

[2] Calculated from data in 2 and 3.

[3] Not available.

Table 37 gives the proportion of scrap and hot metal charged in the open hearth from 1965 to 1971. Scrap use has ranged between 41.1 percent in both 1966 and 1970 and 45.5 percent in 1972.

In the near term open-hearth technology is not expected to change. There has been a definite trend toward increased oxygen and decreased coke oven gas use in the open hearth in recent years. Scrap and fuel oil use has also increased slightly. The other inputs have remained relatively constant.

Table 38 presents three typical production functions for the open-hearth furnace in the near terms. As with the BOF, each production function corresponds to the high, average, or low scrap to hot metal ratio used during the past decade. The production functions are based upon table 11. Each corresponds to a yield of 89 percent.

Due to the expected rapid decline in the use of the open-hearth furnace during the next decade, it is unlikely that there will be any significant changes in open-hearth technology in the long term. Of course, if there is any unforeseen technical improvement, it is possible that the decline of the open-hearth furnace might be halted.

One possible improvement in the open hearth is the submerged injection process. This process involves blowing oxygen into the side of the hearth instead of blowing it in through a roof lance. Melt time is reduced from 4 hours to 2 hours by this process. The likelihood of the submerged injection process being used in any significant amount cannot be estimated at this time. Unless its wide implementation drastically halts the open hearth's decline, it is unlikely to have much effect on steelmaking by 1985.

For the above reasons, the open hearth's production functions in 1985 are assumed to be the same as that given in table 38.

TABLE 37

Proportion of scrap and hot metal used in the open hearth

Year	Scrap	Hot metal
1973	44.5	55.5
1972	45.5	54.5
1971	43.6	56.4
1970	41.1	58.9
1969	44.7	55.3
1968	43.7	56.3
1967	41.2	58.9
1966	41.1	58.9
1965	41.2	58.8

Source: 22-27

TABLE 38

Typical raw material consumption per net ton of raw steel production in the open hearth in the near term

Raw material	Units	Scrap percentage		
		44.6	42.9	41.1
Ore[1]	Net tons	0.02	0.02	0.02
Hot metal[2]	---do---	0.62	0.64	0.66
Scrap[2]	---do---	0.50	0.48	0.46
Lime[2]	---do---	0.01	0.01	0.01
Limestone[2]	---do---	0.04	0.04	0.04
Fluorspar[2]	---do---	0.002	0.002	0.002
Oxygen[2]	Cubic feet	1242	1242	1242
Coke over gas[2]	---do---	324	324	324
Natural gas[2]	---do---	1380	1380	1380
Tar and pitch[2]	Gallons	3.38	3.45	3.51
Fuel oil[2]	---do---	8.29	8.16	8.03
Labor[1]	Manhours	1.00	1.00	1.00
Byproducts				
Scrap generated[2]	Net tons	0.030	0.030	0.030
Slag generated[2]	---do---	0.12	0.12	0.12

[1] Source: 4.

[2] Based on Table 36.

Electric furnaces.—Scrap, lime, and mill scale are the basic inputs to the electric furnace. There are two types of electric furnaces: (a) the electric arc furnace, and (b) the electric induction furnace.

In the electric arc furnace the scrap is charged into the furnace and three carbon or graphite electrodes are lowered into the furnace and the electric power is turned on. Heat is produced by the current arcing from one electrode to the metallic charge and from the metallic charge to the next electrode, et cetera. When the scrap melts, lime is added to form a slag.

In the electric induction furnace, the electrodes are not used. Instead a coil of copper tubing is wrapped around the furnace and an electric current is passed through the copper tubing. This generates a magnetic field which induces a current in the scrap charge. Heat is generated on the outside of the scrap due to the electrical resistance of the scrap charge. The heat is carried to the inside of the scrap by conduction.

Table 39 gives the raw material consumption per net ton of raw steel produced in all electric furnaces. There are some problems with this data. The data indicate that the yield of raw steel from the metallic inputs is over 100 percent. Obviously, this cannot be. Other sources normally state the metallic charge at around 1.068 net tons per net ton of raw steel; however, they do not describe how this figure is determined. For this subnumbered proceeding a metallic input charge of 1.068 net tons will be assumed as the best available evidence.

Table 40 summarizes the proportion of scrap and pig iron (hot metal) in the electric furnace charge. Scrap accounts for 96.8 to 98.9 percent of the charge in a typical year.

TABLE 39

Raw material consumption per net ton of raw steel produced in electric furnaces

Raw materials	Units	1972	1971	1970	1969	1968	1967	1966
Pig Iron[1] (or hot metal)	Net tons	(3)	0.03	0.01	0.01	0.02	0.02	0.01
Scrap[2]	do	(3)	0.96	0.93	0.97	0.97	0.99	1.02
Lime[2]	do	0.028	0.03	0.031	0.039	0.028	0.027	0.026
Limestone[2]	do	0.009	0.007	0.007	0.006	0.0065	0.008	0.008
Fluorspar[2]	do	0.003	0.003	0.0045	0.0035	0.004	0.0035	0.004
Oxygen[2]	Cubic feet	340	330	280	243	283	222	212

[1] Sources: 22-27.

[2] Sources: 2 and 3.

[3] Not available.

TABLE 40

Proportion of scrap and pig iron used in the electric furnace

Year	Scrap	Pig iron
1973	96.9	3.1
1972	97.0	3.0
1971	97.9	2.1
1970	98.5	1.5
1969	98.9	1.1
1968	97.5	2.5
1967	98.1	1.9
1966	98.7	1.3
1965	97.8	2.2

Sources: 22-27.

In the near term electric furnace technology will remain relatively unchanged. Experiments are being conducted on the feasibility of using prereduced pellets in the electric furnace and on the feasibility of preheating scrap before charging into the electric furnace. However, these two process changes are not likely to have any significant effect in the near term.

Table 41 presents three typical production functions for the electric furnace in the near term. Each production function corresponds to the high, middle, or low scrap to hot metal ratio used during the past decade. Since the data in table 39 appear suspect, these production functions are taken from the literature without modification. They correspond to a yield of 93.5 percent.

In the long run, electric furnace technology will be affected by four major technological considerations: (a) prereduced materials, (b) continuous charging, (c) scrap preheating, and (d) hot metal usage.

At present, it is not possible to predict what portion, if any, of future electric furnace technology will consist of the above processes. This subsection discusses the likelihood of each process being in use by 1985 and, when possible, describes the production function associated with the process. In addition, a production function is given for a typical process, assuming that none of these technological changes comes about.

The Final Environmental Impact Statement theorized that electric furnace usage is expected to increase from 15.4 percent in 1970 to 29.5 percent in 1985. It is probable that the new furnaces built during this period will be constructed according to the best technology available.

TABLE 41

Typical raw material consumption per net ton of raw steel production in an electric arc furnace in the near term

Raw material	Units	Scrap percentage		
		97.2	98.1	99.1
Pig iron (or hot metal)[1]	Net tons	0.03	0.02	0.01
Scrap[1]	do	1.04	1.05	1.06
Lime[2]	do	0.03	0.03	0.03
Limestone[2]	do	0.007	0.007	0.007
Fluorspar[2]	do	0.003	0.003	0.003
Oxygen[1]	Cubic feet	340	340	340
Electricity[1]	KWHR	520	520	520
Electrode[1]	Net tons	0.006	0.006	0.006
Labor	Manhours	0.78	0.78	0.78
Byproducts				
Scrap generated[1]	Net tons	0.03	0.03	0.03
Slag generated[1]	do	0.07	0.07	0.07

[1] Source: 17.

[2] Source: 12.

[3] Source: 12, revised, using data in 2.

If there is no change in electric furnace technology, these new furnaces will most likely be built to use the best technology available today.

Table 42 presents the production function for the best contemporary electric furnace practice in 1970. This best practice has been determined by the Bureau of Mines, U.S. Department of Interior.

Table 43 presents the typical production function for electric furnace steelmaking in 1985, assuming no technological change. The production function in table 43 has been derived from the production functions in tables 41 and 42 in the following manner. It is assumed that all new furnaces will have production functions similar to table 42. The 1985 production function is then calculated as a weighted average of the current average technology and this best contemporary technology.

Prereduced materials can be used in place of scrap in electric furnaces. Studies have shown that the use of a charge containing 30-50 percent prereduced materials is the most feasible in terms of reducing power consumption and heat time for the electric furnace. It has also been shown that if prereduced materials are charged in the normal batch practice, operational difficulties occur which can result in higher power consumption and longer heat times.

This has led to studies on the effect of continuous charging of prereduced materials in the electric furnace instead of batch input. These studies have shown that the use of prereduced materials in conjunction with continuous charging decreases heat times and power consumption and increases productivity. Technically the practice appears to be feasible but economic questions have not all been answered.

TABLE 42

Best contemporary electric furnace practice, 1970

Raw material	Units	Amount
Pig iron	Net tons	0.02
Scrap	----do	1.05
Lime	----do	0.03
Limestone	----do	0.007
Fluorspar	----do	0.005
Oxygen	Cubic feet	0
Electricity	KWHR	450
Electrode	Net tons	0.006
Labor	Manhours	0.78
Byproducts		
Scrap generated	Net tons	0.03
Slag	----do	0.07

Source: 12.

TABLE 43

Raw material consumption per net ton of raw steel produced in the electric furnace in 1985

Raw material	Units	Amount
Pig iron	Net tons	0.02
Scrap	----do	1.05
Lime	----do	0.03
Limestone	----do	0.007
Fluorspar	----do	0.004
Oxygen	Cubic feet	177
Electricity	KWHR	486
Electrode	Net tons	0.006
Labor	Manhours	0.78
Byproducts		
Scrap generated	Net tons	0.03
Slag	----do	0.07

Sources: Table 41 and source 12.

The technological advantages of using direct-reduced materials in electric steelmaking are evolving. One of the deterrents is that large amounts of direct-reduced materials are not currently available due to an inadequate supply of natural gas. Also, the results reported to date have not shown a clear superiority over conventional practices using scrap. For these reasons, and because of the uncertainty about future prices for reduced pellets and scrap, acceptance is proceeding slowly. Present direct reduction capacity in the United States is less than 1 million tons per year of direct-reduced iron ore. Consequently, it is not possible to predict either the percent of electric furnaces that will use prereduced materials in the future or the exact prereduced charge that will be input. Table 44 presents production functions for three electric furnace processes using 30-, 40-, and 50-percent prereduced charges, respectively.

The idea of using preheated scrap in an electric furnace has been under study for a number of years. Many different methods have been investigated. Calculations presented have shown that preheating scrap before use in electric furnace can result in lower operating cost per ton of steel produced and higher productivity. However, such calculations must be considered preliminary. More study is required to see if scrap preheating is economically feasible as well as technically feasible. Consequently it is not possible to predict whether scrap preheating will be an integral part of the electric furnace technology in the future or to describe a production function for this process.

The feasibility of using hot metal in an electric arc furnace has been investigated with varying degrees of success. It appears that hot metal will have only a limited application in the electric furnace. Hot metal most likely will be used only in those instances when new steel capacity is required but existing blast furnace capacity is not sufficient to justify construction of a new BOF. In such cases, an electric arc furnace may be built to use the available hot metal. The production function described in the paragraph on best present technology includes a limited pig iron (hot metal) usage.

TABLE 44

Raw material consumption per net ton of raw steel production in an electric furnace using various levels of prereduced materials

Raw materials	Units	Percent prereduced charge		
		30[1]	40[2]	50[1]
Prereduced ore	Net tons	0.33	0.45	0.56
Scrap	do	0.77	0.64	0.56
Lime	do	0.06	0.05	0.06
Limestone	do	0.01	0.01	0.01
Fluorspar	do	0.003	0.002	0.002
Oxygen	Cubic feet	340	340	340
Electricity	KWHR	496	488	480
Electrode	Net tons	0.004	0.004	0.004
Labor	Manhours	0.64	0.64	0.64
Coke breeze	Net tons	0.006	0.007	0.008
Byproducts				
Scrap generated	do	0.03	0.03	0.03
Slag	do	0.14	0.14	0.14

[1] Source: 11.
[2] Source: 12.

Continuous casting.—The raw steel produced in any of the three steelmaking furnaces is formed into semifinished products called slabs, blooms, and billets. These semifinished products are then formed into finished products such as rails, wire, steel sheets, et cetera.

The semifinishing and finishing processes produce recoverable scrap losses and unrecoverable losses. Table 45 shows total raw steel production, net shipments of finished products, and the yield of finished products from raw steel. Shipment data reported by AISI for the years 1970-1972 include estimates of shipments by nonreporting companies. Shipment data reported by AISI for prior years do not include such estimates. In 1970-1972, nonreported shipments averaged 1.59 percent of reported shipments. That data in table 45 for the years 1963-1969 have been modified from AISI data by multiplying the AISI data by 101.59 percent to account for unreported shipments. For the 10-year period, average product yield from raw steel was 69.3 percent.

In 1970, there were an estimated 17 million net tons of continuous casting capacity. There are no statistics available on actual production, but it is believed that production was substantially below capacity. By 1985 it is estimated that there will be 40 million net tons of continuous casting capability, accounting for over 15 percent of raw steel production.

Based on the Final Environmental Impact Statement that half of the 17 million net tons of capacity were used in 1970, continuous casting handled approximately 6.4 percent of raw steel production. Assuming a linear growth to 15 percent by 1985, it is estimated that continuous casting may account for 9.3 percent of production in 1975.

TABLE 45

Product yield

Year	Raw steel production (thousand net tons)	Net shipments (thousand net tons)	Yield (percent)
1972	133,241	91,805	68.9
1971	120,443	87,038	72.3
1970	131,514	90,798	69.0
1969	141,262	[1]95,370	67.5
1968	131,462	[1]93,317	71.0
1967	127,213	[1]85,231	67.0
1966	134,101	[1]91,426	68.2
1965	131,462	[1]94,139	71.6
1964	127,076	[1]86,296	67.9
1963	109,261	[1]76,756	70.3

[1] Modified from AISI data to account for nonreported shipments.

Source 3.

Since conventional casting has an average product yield of around 69 percent and continuous casting has an average product yield of around 85 percent, it is estimated that in 1975 the average product yield from raw steel will be 70.5 percent. It is further estimated that the average product yield will be 71.4 percent in 1985.

Foundries.—In the near term, the technology of the foundry industry is not expected to change significantly from the present technology. Electric furnace use may grow slightly and cupola and open hearth use may decrease slightly.

Foundry shipments are estimated to be 20 million net tons in 1975 and 27 million net tons in 1985. For the last 5 years steel castings have averaged 9.7 percent of the total casting shipments and iron castings have averaged 90.3 percent. Based on these averages, in

1975 steel foundries are estimated to ship 1.94 million tons and iron foundries are estimated to ship 18.06 million tons. In 1985 iron foundries will ship 24.4 million net tons, and steel foundries will ship 2.6 million net tons.

Steel foundries.—The electric furnace is the furnace most widely used in the steel foundry industry accounting for over 70 percent of all steel casting tonnage. The open-hearth furnace is the next most widely used. The cupola furnace produces most of the remainder of the steel castings.

During operation, the cupola furnace first has a bed of sand rammed in to seal the bottom. Coke is placed on the rammed sand bottom and ignited by gas torch or electric starter. Layered charges of scrap, pig iron, coke, and limestone are then added. An airblast is then turned on and melting begins.

Table 46 shows the proportion of scrap and pig iron charges into each steel foundry furnace. The electric furnace uses around 98.5 percent scrap. The cupola furnace uses between 94.5 and 99 percent scrap. The open-hearth furnace has slowly been increasing scrap usage and currently charges over 92 percent scrap.

The consumption of selected raw materials in all steel foundry furnaces per net ton of steel castings shipment is presented in table 47. Based on these data, the yield per ton of shipment has ranged between 51.0 and 55.6 percent since 1966. Separate figures are not available on fluorspar consumption for iron foundries and for steel foundries. In table 22 it has been assumed that steel foundries consume most of the fluorspar. Since steel foundries have produced a relatively constant proportion of all foundry shipments in recent years, any apportionment of fluorspar between iron and steel foundries will not have any effect on a calculation of the total fluourspar consumed by foundries.

TABLE 46

Percentage of scrap and pig iron input in steel foundry furnaces

Furnace	Input	Percent						
		1971	1970	1969	1968	1967	1966	1965
Electric	Scrap	98.7	98.5	98.3	98.3	98.4	98.5	98.5
Do	Pig iron	1.3	1.5	1.7	1.7	1.6	1.5	1.5
Cupola	Scrap	95.5	94.5	98.4	98.8	96.8	95.7	95.5
Do	Pig iron	4.5	5.5	1.6	1.2	3.2	4.3	4.5
Open hearth	Scrap	92.2	91.5	90.1	87.1	88.1	88.3	89.7
Do	Pig iron	7.8	8.5	9.9	12.9	11.9	11.7	10.3

Source: 22-27.

TABLE 47

Consumption of selected raw materials per net ton of steel castings shipments

Raw material	Units	1971	1970	1969	1968	1967	1966
Pig iron	Net tons	0.04	0.06	0.06	0.08	0.09	0.09
Scrap	---do---	1.76	1.80	1.76	1.73	1.87	1.79
Fluorspar[1]	---do---	0.02	0.01	0.01	0.02	0.01	0.01

[1] Assumes steel foundries use virtually all fluorspar used in iron and steel foundries.

Source: 22-27.

Table 48 shows the scrap generated in the production of steel castings as a percentage of the amount of castings shipped. The amount of scrap produced per ton of shipment has been declining rapidly. The percent of scrap generated per ton of shpment has declined from 90.0 percent in 1963 to 54.8 percent in 1971.

In the near term steel foundry technology will remain essentially unchanged. The only change will be in the proportion of castings produced by each type of furnace.

Table 49 presents the estimated percentage of steel castings produced by each type of furnace. These percentages have been calculated based upon the metallic input to each furnace in each year.

Table 50 presents a typical production function for a steel foundry furnace. This production function has been developed from the production function of an electric arc furnace, a cupola furnace, and an open-hearth furnace using a high cold-metal charge by weighing each production function by its percent of use in 1971 as given in table 49.

No major change in steel foundry technology is foreseen by 1985. The most likely change is a continuation of the increase in electric furnace usage and the virtual elimination of the open-hearth furnace. Estimates of changes in production functions or of furnace mix could not be obtained, so the production function in table 25 is assumed to apply in the long term.

Iron foundries.—The cupola furnace is most widely used by the iron foundry industry. The electric furnace accounts for most of the remainder of production. The air furnace has been used in the past but has been almost completely phased out at present.

The proportion of scrap and pig iron charged in each iron foundry furnace is summarized in table 51. Scrap usage in the cupola furnace has steadily increased and currently is over 88 percent of the charge.

TABLE 48

Scrap generated in producing steel castings

Year	Scrap generated	Scrap generated as percent of shipment
	(thousand net tons)	
1971	870	54.8
1970	1032	59.9
1969	1216	64.0
1968	1166	67.3
1967	1468	79.0
1966	1613	74.8
1965	1585	80.8
1964	1496	81.5
1963	1353	90.0

Sources: 22-27.

TABLE 49

Estimate of percentage of steel castings produced, by furnace[1]

Year	Electric	Cupola	Open hearth
1971	79.1	10.9	10.0
1970	76.6	10.3	13.1
1969	74.1	11.0	14.9
1968	65.6	15.9	18.5
1967	68.2	12.4	19.4
1966	68.6	10.4	21.0
1965	67.8	9.6	22.6

[1] Calculated based upon pig iron and scrap inputs reported in Sources: 22-27.

TABLE 50

Typical raw material consumption per net ton of steel castings shipment in the near term[1]

Raw material	Units	Amount
Pig iron[2]	Net tons	0.06
Scrap[2]	do	1.76
Lime	do	0.03
Limestone	do	0.01
Fluorspar[2]	do	0.01
Oxygen	Cubic feet	417
Electricity	KWHR	639
Electrode	Net tons	0.008
Natural gas	Pounds	4.14
Labor	Manhours	1.32

Typical raw material consumption per net ton of steel castings shipment in the near term[1]*—Con.*

Raw material	Units	Amount
Byproducts		
Scrap generated[3]	Net tons	0.548
Slag generated	do	0.10

[1] Based on the following sources:

1. Table 41.
2. 9 and 10.
3. 20.

[2] Based on Table 47.
[3] Based on Table 48.

TABLE 51

Percentage of scrap and pig iron input in iron foundry furnaces

Furnace	Input	Percentage						
		1971	1970	1969	1968	1967	1966	1965
Cupola	Scrap	88.2	85.0	82.3	82.7	80.9	80.1	78.9
Do	Pig iron	11.8	15.0	17.7	17.3	19.1	19.9	21.1
Electric	Scrap	94.2	93.4	95.8	94.7	92.7	87.5	87.9
Do	Pig iron	5.8	6.6	4.2	5.3	7.3	12.5	12.1
Other	Scrap	86.1	80.6	79.4	79.6	90.5	91.8	91.8
Do	Pig iron	13.9	19.4	20.6	20.4	9.5	8.2	8.2

Sources: 22-27.

The electric furnace currently employs a scrap charge of around 94 percent. Other iron foundry furnaces currently use an 86-percent scrap charge.

Table 52 lists the consumption of selected raw materials per net ton of iron foundry shipments. Based on these data, the yield per ton of shipments has ranged between 83.3 and 96.2 percent since 1966. Separate figures are not available on coke consumption for iron foundries and for steel foundries. In table 52 it is assumed that iron foundries use virtually all of the coke. For the reason previously given, a calculation of the coke consumption by foundries is independent of the exact apportionment.

The scrap generated per ton of shipments is given in table 53. The amount of scrap generated per ton of shipment has decreased slightly in recent years. From 1963 to 1967, scrap generation exceeded 40 percent of the amount shipped. From 1968 to 1971, this figure has dropped to around 35.5 percent.

In the near term iron foundry technology is expected to remain essentially unchanged. The only change may be in the proportion of castings produced by each type of furnace.

Table 54 presents the estimated percentage of iron castings produced by each type of furnace. These percentages have been calculated based upon the metallic input to each furnace in each year.

A typical production function is given in table 30. This production function has been developed from the functions of electric arc furnaces, electric induction furnaces, and cupola furnaces, weighing each production function by its percent of use as given in table 29.

TABLE 52

Consumption of selected raw materials per net ton of iron castings shipments

Raw material	Units	1971	1970	1969	1968	1967	1966
Pig iron	Net tons	0.13	0.15	0.17	0.17	0.24	0.26
Scrap	do	1.03	0.89	0.87	0.87	0.96	0.94
Coke[1]	do	0.21	0.21	0.19	0.20	0.20	0.19

[1] Assumes iron foundries consume virtually all the coke used in iron and steel foundries. Data from 12.

Sources: 22-27.

TABLE 53

Scrap generated in producing iron castings

Year	Scrap generated	Scrap generated as a percent of shipments
	Thousand net tons	
1971	5691	37.0
1970	5149	34.8
1969	5814	34.0
1968	5740	35.6
1967	6532	42.5
1966	6930	41.1
1965	6650	39.5
1964	5992	39.1
1963	5664	41.4

Sources: 22-27.

TABLE 54

Estimate of percentage of iron castings produced, by furnace[1]

Year	Cupola	Electric	Other
1971	85.0	12.8	2.2
1970	84.6	12.6	2.8
1969	87.2	10.4	2.4
1968	89.9	7.8	2.3
1967	89.4	4.3	6.3
1966	90.5	1.9	7.6
1965	90.7	1.6	7.7

[1] Calculated based upon pig iron and scrap inputs reported in Sources: 22-27.

No major changes in foundry technology is foreseen by 1985. The most likely change is a continued increase in electric furnace use and a decrease in cupola use. By 1980, it is estimated that electric furnaces will account for not more than 15 percent of iron foundry production.

Estimates of changes in the production function from the near term could not be obtained during the study period, so the production functions in table 55 are assumed to apply for the long term.

TABLE 55

Typical raw material consumption per net ton of iron castings shipment in the near term[1]

Raw material	Units	Amount
Pig iron[2]	Net tons	0.13
Scrap[2]	---do---	1.03
Coke[2]	---do---	0.20
Limestone	---do---	0.04
Natural gas	Pounds	27
Electricity	10^6 BTU	359
Labor	Manhours	1.32
Byproducts		
Scrap generated[3]	Net tons	0.355
Slag generated	---do---	0.02

[1] Sources: 10 and 11.

[2] Based on Table 52.

[3] Based on the latest 4-year average of the data in table 53.

Part I(B)(4): Environmental considerations in the manufacture of iron ores

The major process for producing iron in the United States is the blast furnace. The functions of each of the materials charged are:

a. Iron ore (in the form of pellets, sinter, concentrated ore, or direct shipping ore)—used as the primary source of iron.

b. Coke—provides carbon for the reducing gas and heat.

c. Limestone—flux to make impurities fusible and to remove impurities from the molten iron.

d. Oxygen—added to speed up the reduction process.

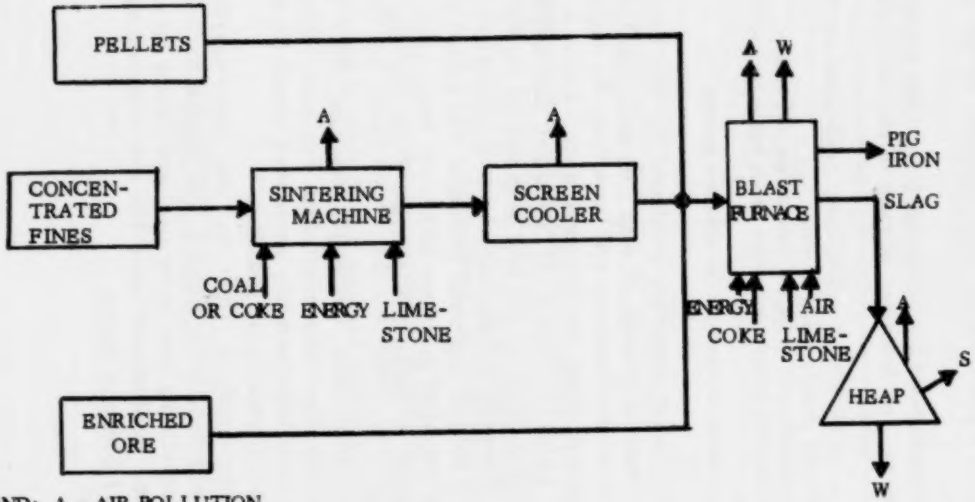
The two major materials produced by the blast furnace are individual molten streams of pure iron and slag. The latter is the mixture of molten limestone and impurities. As might be expected, the high-temperature environment under which a blast furnace operates yields a variety of pollutant discharges. These are enumerated in figure 5. The slag heap may be termed a solid-waste problem. However, in addition to its own undesirable presence, it is a source of both air and water pollution. The former emissions arise from slow chemical reactions within the heap, while the latter are more typical of impurities leached from the slag heap during rainstorms.

For the most part, discharges resulting from blast furnace operations are rigorously controlled. For both the near and long terms the only improvements envisioned would be more effective control and housekeeping practices.

The production of steel by the open-hearth process is schematically depicted in figure 6. The process basically consists of charging molten pig iron, scrap steel and fluxing agent into a large, but shallow, "pool-shaped" area. The mix is heated by exposing the surface to a sweep of flames.

FIGURE 5

BLAST FURNACE OPERATION

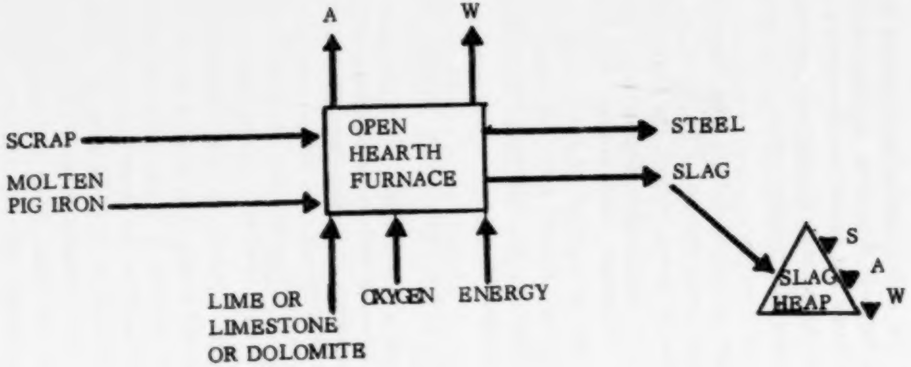

PELLETS
CONCEN-
TRATED
FINES
ENRICHED
ORE
SINTERING
MACHINE
A
COAL
OR COKE
ENERGY
LIME-
STONE
SCREEN
COOLER
A
BLAST
FURNACE
A
W
PIG
IRON
SLAG
ENERGY
COKE
LIME-
STONE
AIR
HEAP
A
S
W

LEGEND: A - AIR POLLUTION
W - WATER POLLUTION
S - SOLID WASTE OR LAND UTILIZATION

SOURCE: AMERICAN IRON AND STEEL INSTITUTE, 1972
STEELMAKING FLOW CHARTS

FIGURE 6

OPEN HEARTH PRODUCTION OF STEEL


A
W
SCRAP
MOLTEN PIG IRON
OPEN HEARTH FURNACE
STEEL
SLAG
LIME OR LIMESTONE OR DOLOMITE
OXYGEN
ENERGY
SLAG HEAP
S
A
W

LEGEND: A - AIR POLLUTION
W - WATER POLLUTION
S - SOLID WASTE OR LAND UTILIZATION

SOURCE: AMERICAN IRON AND STEEL INSTITUTE, 1972
STEELMAKING FLOW CHARTS

The flames melt the charge and over a period of time a mixture of steel and slag is formed. Recently, utilization of an oxygen lance inserted into the flame has raised temperatures and reduced melting time. Thus, production rates of steel are increased. Typically, the open-hearth process will produce about 350 tons of steel in 5 to 8 hours.

The major form of pollution in the open-hearth furnace is particulates emitted into the air. The blasts of the oxygen lance create considerable agitation in both the flame and melt areas. This in turn increases the particulate discharges from these furnaces.

The pollutant discharges and energy demands are somewhat dependent upon the proportion of scrap iron to molten pig iron charges. While no exact figures were revealed for relative changes, with changing proportions the following will most likely occur if the scrap charge is increased:

a. Particulates (no oxygen lance)—slight increase dependent upon fuel characteristics for flame.
b. Particulates (oxygen lance)—increase.
c. Sulfur—increase dependent upon fuel characteristics.
d. Slag—decrease, dependent upon scrap impurities.
e. Energy from fuel—increase.
f. Energy from flux—decrease.
g. Energy from oxygen—increase.

The basic oxygen process is the dominant mode of steel production in America today. The reason for its rapid replacement of the open-hearth process is higher efficiency. Typically the same amount of steel produced in the open-hearth process can be made in the basic oxygen process in 10 to 20 percent of the time. The heart of the process is a pear-shaped furnace which is charged with hot metal, scrap metal, and flux. After the charge is complete, high-pressure oxygen is released into the mixture. The carbon and silicon in the hot metal are oxidized and the reaction generates the required heat to melt the scrap. It should be noted that no external heat sources are supplied to the system, as the molten iron provides the initial combustion temperatures for the initiation of the oxidation reactions. It is this lack of external heat that limits the percentage of scrap that may be charged to the system. Since scrap is normally at or close to the ambient air temperature upon charging, excessive amounts would quench the molten pig iron charged and not permit the start of the oxidation process.

A schematic representation of the basic oxygen process is given in figure 7 showing the sources of pollution and points of energy inputs.

The electric arc furnace is capable of receiving a metallic charge composed entirely of scrap. The furnace consists of a cup-shaped receptacle which is charged with scrap, pig iron, high-grade iron ore, and flux (lime). After charging is complete, large amounts of electricity at moderate voltage are supplied through large graphite electrodes extending down through a roof on the furnace. Melting is accomplished by the heat of the arc formed between the electrodes and the charge.

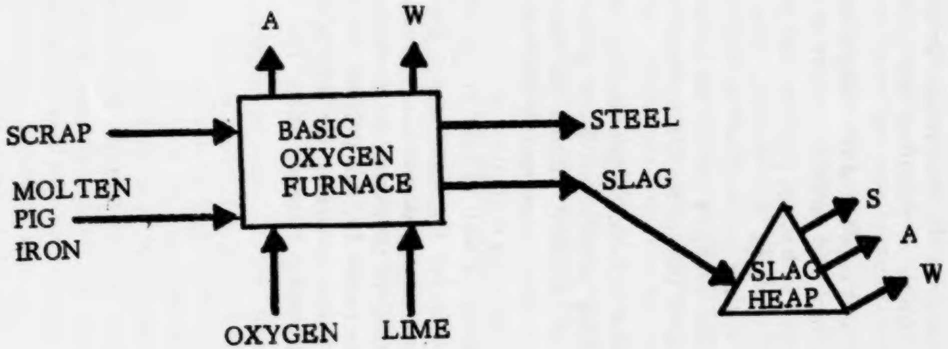
As with the open-hearth process, oxygen lancing may or may not be practiced. The lancing process produces greater particulate emissions than would be obtained without the lance. Since the electric arc process is a major consumer of electrical energy, the total pollution load necessary for evaluation of this process includes that at the power plantsite as well as that at the furnace site.

Figure 8 is a schematic for the electric arc process showing sources of pollutants and energy demands.

Once the molten steel is prepared, it is ready for casting. Currently, there are two routes for this process, conventional and continuous casting. With both processes, the molten steel is poured into a ladle. The relationship between these two techniques is depicted in figure 9.

FIGURE 7

STEEL PRODUCTION BY THE BASIC OXYGEN PROCESS

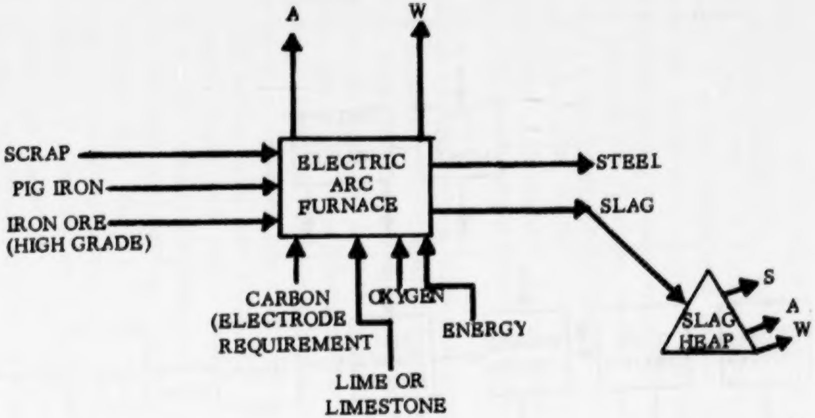

A
W
SCRAP
MOLTEN PIG IRON
BASIC OXYGEN FURNACE
STEEL
SLAG
OXYGEN
LIME
SLAG HEAP
S
A
W

LEGEND: A - AIR POLLUTION
W - WATER POLLUTION
S - SOLID WASTE OR LAND UTILIZATION

SOURCE: AMERICAN IRON AND STEEL INSTITUTE, 1972
STEELMAKING FLOW CHARTS

FIGURE 8

ELECTRIC ARC PROCESS FOR PRODUCTION OF STEEL

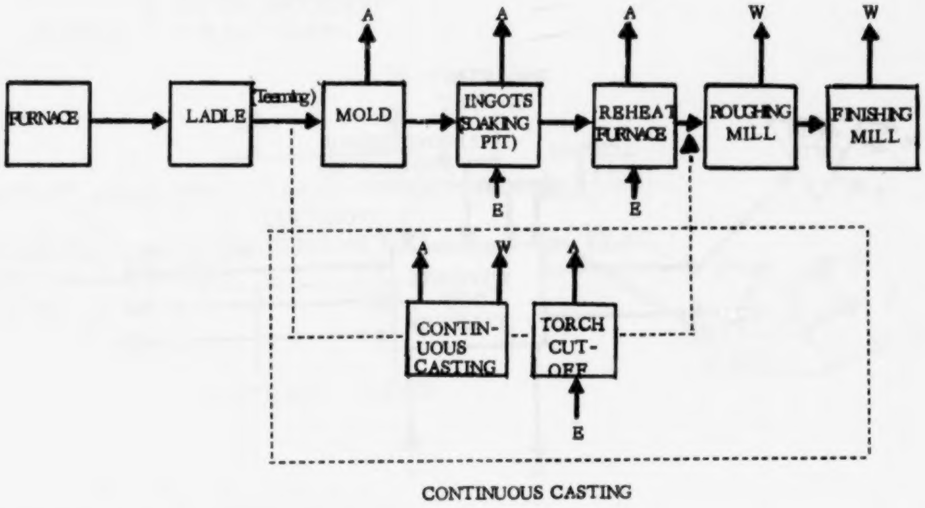

A
W
SCRAP
PIG IRON
IRON ORE
(HIGH GRADE)
ELECTRIC
ARC
FURNACE
STEEL
SLAG
CARBON
(ELECTRODE
REQUIREMENT
OXYGEN
ENERGY
LIME OR
LIMESTONE
SLAG
HEAP
S
A
W

LEGEND: A - AIR POLLUTION
W - WATER POLLUTION
S - SOLID WASTE OR LAND UTILIZATION

SOURCE: AMERICAN IRON AND STEEL INSTITUTE, 1972
STEELMAKING FLOW CHARTS

FIGURE 9

CASTING PROCESSES FOR STEEL PREPARATION


FURNACE
LADLE
(Teeming)
MOLD
INGOTS (SOAKING PIT)
REHEAT FURNACE
ROUGHING MILL
FINISHING MILL
A
A
A
W
W
E
E
CONTIN-UOUS CASTING
TORCH CUT-OFF
A
W
A
E
CONTINUOUS CASTING

LEGEND: A - AIR POLLUTION
W - WATER POLLUTION
E - ENERGY REQUIREMENT

SOURCE: AMERICAN IRON AND STEEL INSTITUTE, 1972
STEELMAKING FLOW CHARTS

In the conventional process, molten steel is poured into a mold. When its exterior surface solidifies, the ingot is transferred to a soaking pit until the entire block is of uniform temperature. When the ingots are ready, they are transferred to the roughing and finishing mills where the preliminary shapes of the steel products are made. The continuous casting process essentially short circuits the ingot formation and treatment steps; molten steel is poured through a tundish into a water-cooled mold where a "skin" is formed on the outside of the liquid steel. As the moving column of steel is cooled, it eventually solidifies throughout. At this point it is cut into segments. From this point processing is almost identical to that used for ingots.

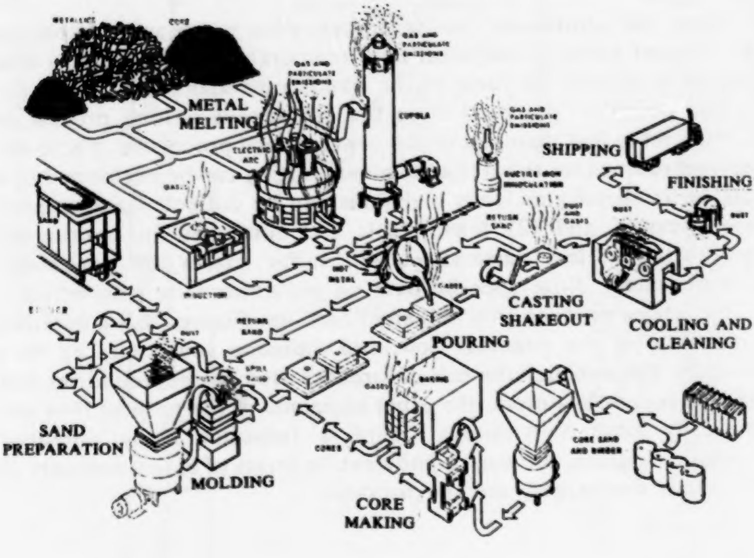
Since the continuous casting process does not require a soaking pit (heated areas) to maintain steel temperatures, considerably less energy is needed for fuels in the soaking pit and reheat furnaces.

The pollution potential from the continuous casting process is considerably less than that of the conventional procedure. There are several reasons for this: (1) continuous casting can be performed in a highly localized area, thus emissions can be collected and treated more easily, and (2) fewer fuels are consumed in continuous processing so less particulates and sulfur oxides are generated. Unfortunately, little specific data on pollution were uncovered.

Foundries produce iron and steel castings. Figure 10 is a detailed schematic of the process, flow, and emission sources of an iron foundry. Even though the mix of furnaces used in steel foundries and in iron foundries differs, the other segments of the process flow are basically similar. Although figure 6 indicates many potential emission sources, the most significant, in terms of actual amounts of materials discharged, are the furnaces.

FIGURE 10

IRON FOUNDRY PROCESS FLOW
SOURCES OF EMISSIONS


METALLICS
COKE
GAS AND PARTICULATE EMISSIONS
GAS AND PARTICULATE EMISSIONS
METAL MELTING
CUPOLA
ELECTRIC ARC
GAS AND PARTICULATE EMISSIONS
SHIPPING
DUCTILE IRON INOCULATION
FINISHING
SAND
GASES
INDUCTION
HOT METAL
RETURN SAND
DUST AND GASES
DUST
DUST
GASES
CASTING SHAKEOUT
COOLING AND CLEANING
BINDER
DUST
RETURN SAND
POURING
SPILL SAND
GASES
BAKING
SAND PREPARATION
CORES
CORE SAND AND BINDER
MOLDING
CORE MAKING

SOURCE: A. T. KEAKNY & CO., 1971, VOL. II

During the course of the study two problems were identified. First, there were significant gaps in the data available. Those pollutants for which data were not available are not discussed in this section since they could not be considered in these quantitative analyses. Second, in several cases when more than one source was available, comparability problems could not be resolved. When this occurred both values are presented.

Pollutants generated in steel and foundry production affect all three elements of the environment: air, water, and land. Because it is the major source of pollutants, it has also been evaluated in detail and a large amount of data is available. The data for (1) uncontrolled air emissions is presented in table 56, and (2) uncontrolled water pollution and energy is presented in table 57.

Three modes of transportation are used: water, truck, and rail. The expected air emissions for these modes in 1975 are given in table 58. The data are averages for the complete U.S. transportation system. The emission data are given on a ton-mile basis. To convert raw material requirements to transportation requirements and, therefore, emissions, average mileage for each raw material by mode of transportation is required. These data are summarized in table 59.

Except for transportation, the data presented in the preceding section are for uncontrolled emissions. In the near term and long term, many of these emissions will be controlled. To account for these changes in control, uncontrolled emission data were modified. For the near term, efficiencies of available techniques and current levels of application were used when data were available.

TABLE 56

Uncontrolled air emissions for steel and foundry production activities

(In pounds/ton of activity)

Process/step	Particulates	SO_x	NO_x	CO	OTHER	[12]Data sources
Coke production-						
Transfer and handling	15					5
Oven	3-20	4	.04	1.9	[1].18	5, 7, and 29
					[2]4.2	29
Byproduct plant	2.1	5.5				5
Quench	.3-4					5 and 7
Sintering-						
Sintering machine	44	1.97		44		4, 7, and 29
Sinter cooler	22					4
Blast furnace	55					4
Open hearth	[3]8-22	.7				4 and 7
Basic oxygen	46	.03				4, 7, and 29
Electric Arc	[4]12-50	.01		18		4 and 29
Iron foundries	[5]16-21			99-220		9, 10, and 29
Steel foundries	[6].1-40			0-.2		9, 10, and 29
Electric utilities[7]						
Bituminous coal	[8]2	[9]5	2.9	.13	[10].04	
Fuel oil	.19	[9]3.7	2.5		[10].046	7, 16, and 29
					[11].023	7, 16, and 29
Natural gas	.05	.002	1.32	.0014	[10].0014	
					[11].027	7, 16, and 29

[1] Ammonia.

[2] Hydrocarbons

[3] With and without lance

[4] Range due to scrap cleanliness and use of lance

[5] Includes reverberatory particulates

[6] Depends on type of furnace used

[7] Units are in pound/MWe produced

[8] Times ash content, in percent

[9] Times sulfur content, in percent

[10] Hydrocarbons

[11] Aldehydes

[12] Numbers refer to references at end of report

TABLE 57

Uncontrolled water pollutants from and energy requirements for steel and foundry production activities
(IN POUNDS/TON OF ACTIVITY)

Process/step	Water (Suspended solids)	Energy (KWH/ton of Activity)	Data sources[5]
Coke			
Byproduct plant	[1].3, [2].3, [3].5	[4]330	5, 30
Blast furnace	55	4209	6, 7
Open Hearth		1123	4, 6
Basic oxygen	40	366	4, 6, 7
Electric Arc	10	1630-2000	4, 6, 7
Conventional casting		1900	4, 6
Iron foundries		311-401	9, 10
Steel foundries		1420-1620	9, 10

[1] Cyanide.

[2] Ammonia.

[3] Phenols.

[4] Includes recycled coke oven gas.

[5] Numbers refer to references at end of report.

TABLE 58

Air emissions and energy consumption for transportation modes

Mode	Air emissions (pounds/thousand ton-miles)					Energy (KWH/thousand ton-miles)
	Particulates	SOx	NOx	CO	Hydrocarbons	
Water	.2	.89	.72	5.9	1.1	120
Truck	.4	.5	8	80	6	2100
Rail	.11	.28	.33	.29	.22	180

Data Source: 8

TABLE 59

Transportation required to move raw and recyclable materials
(in miles)

Mode	Coal	Flux	Ore	Scrap
Rail	134	76	249	141
Truck	4	85	0	0
Boat	16	63	402	22

Source: 8

For the long term, estimates of percent of emission removed were made based upon the efficiencies of currently available technologies and projected increases in the degree of application. When no data were available, zero control was assumed for the near term and 50 percent removal was selected for the long-term level of control. The data on the near-term and long-term controls used in the study are presented in tables 60 and 61.[9]

A comparison of environmental impacts for the production of carbon steel using a 100-percent ore charge in a basic oxygen furnace and using a 100-percent shredded auto hulk charge in a electric furnace has been provided by the U.S. Environmental Protection Agency (EPA). The figures shown in tables 62 and 63 appear to point up a significant difference in the environmental impacts of the two systems. It should be noted, however, that the figures shown rely on a hypothetical set of circumstances that have not been shown to exist anywhere in the country. For example, as shown in part I(B)(3), BOF charges of metallic inputs normally consist of approximately 71 percent iron ore and 29 percent scrap iron not 100 percent ore as shown in the EPA example. Electric furnace charges normally consist of 97 percent scrap and 3 percent iron ore, not 100 percent scrap as shown in the EPA example. Further, due to the varying chemical consistencies and varying melting speeds of scrap iron and steel, it is unlikely that a charge of 100 percent shredded auto hulk scrap is at all efficient, if indeed it is possible. With these caveats, the EPA data are presented unchanged.

---

[9] Figures in table 5 may be altered in the future as a result of guidelines to be published by the Environmental Protection Agency pursuant to the Federal Water Pollution Control Act Amendments of 1972.

TABLE 60

Summary of uncontrolled loadings and near term and long term controls

Process	Pollutant	Uncontrolled (#/ton of activity)	Near term: Control efficiency (in percent)	Near term: Control application (in percent)	Long term (percent removed)	Data sources[1]
Extraction and processing						
Iron ore	Particulates	7.5	90	35	63	13
Coal	----do----	12	95	80	90	13
Limestone	----do----	51	80	25	40	13
Lime (from limestone)	----do----	140	93	82	90	13
Steel production						
Coke production	----do----	30.5	0	0	50	13
	SOx	9.5	95	0	50	18
	NOx	.04	0	0	50	
	Ammonia (air)	18	0	0	50	
	Hydrocarbons	4.2	0	0	50	
	CO	1.9	0	0	50	
	Cyanide	3	90	35	63	30
	Ammonia (water)	3	90	35	63	30
	Phenols	5	90	35	63	30
Sintering	Particulates	66	90	100	90	13
	SOx	1.97	95	0	50	18
	CO	44	0	0	50	
Blast furnace	Particulates	53	99	100	99	13
	Suspended solids	55	95	40	76	30
Open hearth	Particulates	15	97	41	80	13
	SOx	7	95	0	50	18
Basic oxygen	Particulates	46	99	100	99	13
	SOx	.03	95	0	50	18
	Suspended solids	40	95	40	76	30
Electric arc	Particulates	31	99	79	99	13
	SOx	.01	95	0	50	18
	CO	18	0	0	50	
	Suspended solids	10	95	40	76	30
Iron foundries	Particulates	18.5	80	33	52	13
	CO	160	0	0	50	
Steel foundries	Particulates	20	80	33	52	13
	CO	.1	0	0	50	

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[1] Numbers refer to references at end of report. For those data elements with no source given, data is developed using guidelines presented in the report.

TABLE 61

Long-term controls on transportation emissions
(Percent reductions in 1975 levels)

Emission	*Truck*
Particulate	45
SOx	4
NOx	------------
CO	42
Hydrocarbons	75

Data Source: 8.
Note: Water and rail emissions will remain at 1975 levels.

TABLE 62

Comparison of environmental impacts for the production of carbon steel using virgin and/or recycled materials
(Per 1 ton of carbon steel ingot)

	System I BOF, virgin materials	System II Electric furnace, auto shredder scrap
Material inputs (pounds):		
Raw materials:		
Iron ore	2,747.8	------------
Limestone	768.7	146.7
Fluorspar	14.3	5.9
Other fluxes	16.7	4.2
Total raw materials	3,547.5	156.8
Home scrap	732.6	765.6
Obsolete scrap	------------	1,786.4
Total all materials	4,280.1	2,708.8
Water discharged (gallons):		
Process	20,226.4	180.3
Mine drainage	95.04	16.6
Total water	20,321.44	196.9
Air emissions (pounds):		
Particulates	21.31	2.2
Sulfur oxides	6.7	6.3
Carbon monoxide	2.1	6.8
Hydrocarbons	3.9	3.8
Nitrogen oxide	4.1	7.8
Aldehydes	0.05	0.06
Organics	0.02	0.06
Ammonia	0.14	------------
Total air emissions	38.31	27.02

Comparison of environmental impacts for the production of carbon steel using virgin and/or recycled materials—Continued
(Per 1 ton of carbon steel ingot)

	System I BOF, virgin materials	System II Electric furnace, auto shredder scrap
Water pollutants (pounds):		
Suspended solids	0.06	----------
Dissolved solids	2.45	0.61
BOD	0.0088	----------
Oil and grease	0.004	0.004
Iron	0.004	----------
Phenols	0.0004	----------
Sulfide	0.0004	----------
Ammonia	0.011	----------
Cyanide	0.0002	----------
Fluoride	0.0242	----------
Total water pollutants	2.5630	0.614
Solid wastes (pounds):		
Overburden	14,633.0	2,663.2
Process	10,650.2	246.4
Post-consumer	----------	-1,955.8
Total solid waste	25,313.2	943.8

Source: Studies performed by independent contractors for EPA.

TABLE 63

Comparison of environmental impacts for the production of carbon steel using virgin and/or recycled materials
(Per 1 ton of carbon steel ingot)

Energy consumption	System I BOF virgin materials	System II electric furnace auto shredder scrap
(In thousands of BTU)		
Iron ore mining	1,898	----------
Limestone mining	81	15
Lime production	412	157
Blast furnace area	14,687	----------
Oxygen production	663	131
BOF	619	----------
Auto hulk processing	----------	190
Auto scrap processing	----------	708
Electric furnace	----------	7,104
Total	18,360	8,305

Source: Studies performed by independent contractors for EPA.

Part I(C)(1): Transportation of iron ores, transportation characteristics.

In part I(A)(3) we have outlined our perception of the general transportation characteristics of iron ores, and we have provided information as to the locations of the sources of supply and demand for this commodity in parts I(A)(1) and I (B)(1). In this section it will be our purpose to present in greater detail the individual facets of iron ore movements that make up the overall rail transportation characteristics on upper lake and ex-water movements. In part I(C)(1) of Ex Parte No. 270 (Sub-No. 6), Investigation of Railroad Freight Rate Structure—Scrap Iron and Steel, we will present similar information on the transportation characteristics of scrap and will make comparisons between the two commodities.

For purposes of transportation, nine steelmaking regions are defined in table 64. Each region is comprised of steelmaking centers which obtain iron ore from the same major sources on a regularly scheduled basis and which use the same modes of transport for the ore. In addition, the steelmaking centers within each region also have the same major sources of coal and utilize similar modes of transport for that commodity.

Table 65 summarizes the major source of ore for each steel-producing region and the primary means of transportation. Regions on the Great Lakes tend to have the ore moved by rail from the mine to the Lakes and then by ore-carrying vessel to the mill. Inland regions have ore moved by all-rail, rail-water-rail, and ocean-rail routes.

Many of the steel-producing centers are near water. Over 75 percent of domestic ore is moved to the steel-producing regions using rail transportation combined with ore-carrying vessels on the Great Lakes.

TABLE 64

Steel producing regions

Region name	*Representative steelmaking centers*
New York	Buffalo, N.Y.
Eastern	Sparrows Pt., Md., Bethlehem, Pa., Swedeland, Pa.
Pittsburgh-Youngstown	Pittsburgh, Pa.-Youngstown, Ohio, Weirton, W. Va., Johnstown, Pa.
Cleveland-Detroit	Cleveland, Ohio-Detroit, Mich.
Chicago-Gary	Chicago, Ill.-Gary, Ind.
Southern	Birmingham, Ala., Alabama City, Ala.
Texas-Louisiana	Houston, Tex.-Daingerfield, Tex., Harvey, La.
Western	Pueblo, Colo.-Geneva, Utah
California	Fontana, Calif.

Source: 15.

TABLE 65

Ore source and primary means of transportation (1973)

Steel producing region	Major source of ore	Primary means of transportation
New York	Lake Superior	Rail-water.
Do	Northeast	All rail.
Do	Eastern Canada	Seaway/Lakes-Rail and ocean-rail.
Eastern	Lake Superior	Rail-water-rail
Do	Northeast	Rail.
Do	Venezuela	Ocean-rail
Pittsburgh-Youngstown	Lake Superior	Rail-water-rail
Do	Eastern Canada via Philadelphia and Baltimore.	Seaway-Lakes-rail and ocean-rail.
Do	Venezuela-Philadephia and Baltimore.	Ocean-rail.
Cleveland-Detroit	Lake Superior	Rail-water
Do	Eastern Canada	Seaway/lakes-rail and ocean-rail.
Chicago-Gary	Lake Superior	Rail-water.
Southern	Georgia	Rail
Do	Missouri	Rail
Do	Venezuela via Alabama	Ocean-rail
Do	Eastern Canada via Alabama	Ocean-rail
Do	Tennessee	Rail
Texas-Louisiana	Texas	Rail
Do	Venezuela via Louisiana	Ocean-rail
Western	Utah, Wyoming, Nevada	Rail
California	California	Rail

Source: 15.

In addition, imported ore (approximately 32 percent of all ore consumed in the first 8 months of 1974) also moves by water, mostly by ocean vessels. Since many of the firms importing ore operate their own ships, very little data are available concerning volume and costs.

The voluminous rail movements of iron ores to interior steel furnaces in the Northeastern United States recur regularly from the same origins to the same destinations. These movements are highly concentrated geographically and the only real variable is the volume of iron ores transported which in turn depends upon the rate of steel production. At least 90 percent of the total iron ore traffic hauled by the railroads in the Northeast moves from six Lake Erie and three Atlantic coast ports to interior steel furnaces located principally in three States: Pennsylvania, Ohio, and West Virginia.

Iron ores are carried under conditions which, while not optimum, are probably as favorable as those associated with the transportation service performed for any other individual commodity by United States railroads. Shipments are almost entirely comprised of trainload quantities and generally move via direct, single-line railroad service with the consequent maximum net revenue results for the railroads. Facilities at the mines, ports, and mills required for the loading and unloading of cars and vessels; the weighing of cars; and the makeup and dispatching of complete trains are all geared to maximum transportation efficiency.[10]

It should be kept in mind that the rail transportation to interior steel furnaces is only the final link of the total transportation required to move iron ore from its origin sources to the interior northeastern steel furnaces. As only a very minor portion of the iron ore consumed is moved direct by rail from origin to destination, the costs involved in water transport and previous rail transport must be added to the costs of rail transport to the mills to give an accurate picture of total transportation costs. Current statistics indicate that the average rail haul for iron ores is 119 miles and the average water movement is 402 miles if ocean transport is eliminated and 742.1 miles if ocean transport is included.

Upper lake movements.—Advantages associated with the movement of ores from the mines to the upper lake ports include: the exceedingly large volumes for each repetitive movement, the substantial capital investment of shippers in technologically advanced loading facilities, the simplicity of the train movements themselves, and the favorable handling characteristics of pellets which in 1972 comprised nearly 75 percent of all ore movements in the Lake Superior District.[11] The investment in the technology to decrease the loading time for iron ore trains in this area has been made entirely by the upper lake shippers. Some of these loading facilities operate at a rate in excess of 6,000 gross tons per hour. At the Butler Taconite plant managed by Hanna Mining, a BN unit train of 190 cars is loaded at the rate of 40 seconds per car. The unit train is in continuous motion as it moves under the "ore tipple" at 0.4 m.p.h. The total loading time for 13,000 tons into the 185-195 ore cars is generally less than 3 hours.

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[10] Movements from some mines are in less-than-trainload amounts and at some locations high speed loading and unloading facilities are not available.

The volume of traffic from each upper lake shipper is also substantial. In 1972 Hanna Mining shipped 2.3 million tons of iron ore pellets from its Butler Taconite plant via the BN and paid that carrier $3.7 million in gross revenues for that year. The Eveleth Taconite Company annually ships over 2 million tons of iron ore pellets to Duluth via the DM&IR. In total in 1972, approximately 24 million gross tons of iron ores were shipped by the upper lake shippers via the upper lake carriers for gross revenues in excess of $34 million. These totals do not include the substantial additional gross revenues the upper lake carriers received from U.S. Steel for the estimated 17 million gross tons shipped from its Minntac plant and other mines.

The proximity of the Lake Superior District ranges to the five ports and their small area permit the railroads to handle the upper lake shippers' large annual ore volume with a minimum overhead of cars, locomotive power, labor, and trackage.

The Mesabi range in northern Minnesota is approximately 65 miles northwest of Duluth at its nearest point, and is approximately 90 miles long and averages 1 1/2 miles wide. The Mesabi is served by the rail lines of the DM&IR and BN, with lines dropping from the range down to the docks at Duluth, Two Harbors, and Allouez. The DM&IR with gross revenues in excess of $35 million in 1972 has only 528 miles of track. The BN, which utilizes less than 500 miles of its 26,853 miles of track for Mesabi iron ore movements, received $17 million in gross revenues for iron ore movements in 1972, primarily from the Mesabi range.

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[11] Pellets are much easier to transport than natural ore because they do not freeze in railcars, permitting year-round transportation and handling; further, pellets lend themselves to very efficient loading methods and high-speed reclamation from stock piles.

The DM&IR owns and maintains its primary iron ore loading dock at Duluth, and has a back-up dock at Two Harbors. The BN maintains its only docks at its Allouez facilities near Superior, Wis. The requirements of the customers of the DM&IR and BN provide the advantage that the movements are all to a single destination, namely, Duluth, Two Harbors, or Allouez docks.

In 1972, the BN moved more than 10 million gross tons over its Allouez docks and the DM&IR moved nearly 21 million tons over its two docks.

Not insignificant is the uncomplicated route taken by the ore trains. The northern area of Minnesota is sparsely populated and the round trip time of the ore trains from the ore docks to the range and back is suprisingly short. As an example, the BN unit train of 185-195 cars serving Hanna's Butler Taconite plant makes its round trip of 230 miles in about 12 hours, including loading time of approximately 2.5 hours.

The Marquette range, in the Upper Peninsula of Michigan, borders the south shore of Lake Superior. This range is served primarily by the LS&I which has only 135 miles of track and receives virtually all its iron ore revenues from the upper lake shippers. In 1972, the LS&I had gross revenues for iron ore shipments of $4.2 million.

The trackage utilized by the C&NW in its iron ore business is principally a single route of approximately 68 miles running from Ispheming to Escanaba, Mich. The C&NW, in 1972, collected approximately $4.4 million in gross revenues from the upper lake shippers for Marquette range movements.

The Menominee range is south of the Marquette range in the Upper Peninsula of Michigan and is served primarily by the C&NW. All of its iron ore is shipped through the C&NW's ore docks at Escanaba. Hanna Minning as the major upper lake shipper on the Menominee range, in 1972, paid the pooled operations of the C&NW/Milwaukee $2 million for iron ore shipments from Iron River and Randville, Mich., to the C&NW docks at Escanaba. In addition, Inland Steel shipped 381,000 tons of iron ore from the Menominee range via the C&NW in 1972.

Substantially all the iron ore produced by the upper lake shippers is transferred to ore boats at five docks owned and operated by the upper lake carriers.[12] In 1972, the nearly 24 million gross tons shipped by the upper lake shippers was distributed as follows:

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[12] As noted in part 1(C)(2) all-rail movements from the producing mines to the steel mills are occasionally used. On one such move (Black River Falls, Wis., to East Chicago, Ind.) it was discovered that unused train capacity made daily shipments of 30 cars less costly to the railroad than trainload shipments every 3 days.

TABLE 66

Distribution of upper lake iron ores

Port	Upper lake carrier	1972 tonnage (millions of tons)
Duluth and Two Harbors, Minn.	DM&IR	4.4
Superior, Wis	BN	8.3
Marquette, Mich	LS&I	3.1
Escanaba, Mich	C&NW	8.2
		24.0

The above totals do not include the approximately 17 million tons shipped in 1972 by U.S. Steel over the Duluth (Two Harbors) docks of its subsidiary, the DM&IR.

The DM&IR dock at Duluth consists principally of two loading piers with capacity to store 217,000 gross tons of ore and load several ore boats simultaneously. Direct unloading into dock pockets is done by gravity as the ore train is broken up in two or three sections and run onto the loading pier. The iron ore is dropped into dock pockets to await the ore boats, which are also loaded by gravity feeding the ore down chutes into the boat's hold. The single-car and volume rates include delivery by the DM&IR to hold of vessel. However, a shipper is generally allowed only a specific tonnage at the dock at any one point in time. For excess tonnage a handling charge is imposed.

DM&IR notes three difficulties attendant to this operation. First, considerable switching is required at the dock yards to build up the proper cuts of cars for movements to the dock for loading into vessels. Second, a pool of ore cars must be held under load at the dock yards to act as a buffer between mine operations and vessel arrivals. Third, moisture content becomes a significant factor at the end of the season when temperatures fall below freezing. When the ore freezes, the carrier must supply thawing service as a necessary part of the unloading process.

The dock facility of the BN at Allouez allows a unit train of pellets to be unloaded without switching. The loaded ore cars are simply pulled over a below-grade conveyor system and bottom dumped. If the iron ore pellets are to be directly loaded into a waiting ore boat or stored temporarily in the pier pockets, the ore passes directly by conveyor. If the ore is to be stored, the conveyor dumps into a storage yard equipped with a stacker and a reclaimer for later delivery to the loading pier.

Attempts to improve dock loading facilities have not always been immediately successful. The new C&NW low level, traveling shiploader, conveyor type of dock went into operation early in 1969. It was an untried new approach to handling iron ore. Similar design parameters had been previously used successfully on coal. Unfortunately, the dock did not perform as advertised and unforeseen environmental problems developed. These problems involved sound and air pollution. Extensive additional capital investments were required to overcome these problems.

Today, iron ores are moved from the ranges in unit trains up to 200 cars in length, and at 70 tons of ore per car, a single train can move a payload of 14,000 gross tons. The BN unit train carrying Hanna Mining's Butler Taconite shipments makes the round trip from dock to mine to dock in less than 12 hours, yielding at least $24,000 in gross revenues per trip. This movement is regularly completed by one crew which starts with the empty unit train in the morning from the dock and returns the loaded train late in the afternoon. Switching is not required in the movement except to the extent that the unit train must be broken up due to bad-order equipment.

For Hanna Mining's Butler Taconite movements, the turnaround time for an ore car is not more than 24 hours. The unit train serving Butler Taconite makes a round trip of less than 12 hours and the yard car unloading operator would normally have the entire train unloaded in 6 more hours. The next morning the same unit train is normally sent to the National Steel Pellet Plant and on the second or third day it returns again to Butler Taconite.

In 1952, the Great Northern (predecessor of the BN) had approximately 8,000 ore cars in use and moved approximately 31 million gross tons from the Mesabi range to the Allouez docks. Today, the BN can move up to 5 million tons of iron ore pellets per year with a single 200-car unit train. While this high degree of car utilization is not achieved on all Lake Superior District ore movements, the overall average car utilization is greater than that generally experienced by railroads on other traffic. Under the volume rates, a shipper typically pays a substantial penalty for delays caused by the shipper which is computed hourly, but similar delays by shippers of other commodities would be subject only to daily demurrage charges.

The advent of pelletization has provided a year-round business for the upper lake carriers. Via the BN, Hanna Mining ships from its Butler Taconite plant approximately 13,000 tons every second day, summer and winter. Iron ore pellets produced outside of the Great Lakes vessel navigation season are stored in railroad storage areas adjacent to the docks. A storage fee is charged to the shipper plus a handling charge. During the vessel navigation season, the winter production is commingled with the seasonal production and loaded into the ore boats.

Compared to the movements of other commodities, iron ore shipments in the Lake Superior District are particularly regular, generating efficiencies in the use of crews, engines, and ore cars. At Butler Taconite, for example, Hanna Mining notifies the BN by an advance monthly statement of the expected tonnage to be shipped and the days on which unit trains will be needed at Butler. The schedule is verbally confirmed the day before the train is released and for each run the BN is assured of a full payload. Moreover, neither the production of the pellets nor their shipment by rail to the Allouez docks are affected by adverse weather conditions.

Not without importance is the simplified billing procedures utilized by the upper lake carriers. For example, the BN prepares for Butler Taconite shipments only one waybill per month, based upon the estimated shipment schedule supplied by Hanna Mining. Only a memorandum bill is prepared for each shipment and adjustments are made after month end.

The iron ore pellets movement described below demonstrates many of the characteristics of the Lake Superior District iron ore traffic which are benefical to the upper lake carriers: Butler Taconite Project ("Butler") in Nashwauk, Minn., produces annually approximately 2.7 million tons of iron ore pellets under the management of Hanna Mining. In 1974, Butler is in its seventh year of operation and is expected to produce pellets at the present rate for more than 40 years to come. Included in the more than $80 million investment of the owners to develop Butler are the iron ore pellet loading facilities on Butler's premises which allow continuous loading while the train is in motion.

Butler is exclusively served by the BN which receives in excess of $4.5 million annually in gross revenues for its transportation of iron ore pellets from Butler. The pellets are transported in ore cars which carry approximately 70 gross tons each. The shipments from Butler have such regularity that a monthly schedule is issued to the BN calling for a unit train generally every second day. Normally a unit train departs from Allouez, Wis., consisting of three engines at approximately 4 a.m. and arrives at Butler between 8 and 9 a.m. The engine pulls the 185-195 ore cars under the load-out facility and the pellets are loaded by gravity while the unit train is in continuous motion. The Butler facilities have a loading rate of over 6,000 long tons per hour and the train is entirely loaded in 2 to 3 hours. The tariff (BN-31A, effective December 1, 1972) provides that Butler is allowed up to 4 hours to load the unit train and if extra time is required Butler pays a penalty to the railroad.

After the 120-mile return trip from Nashwauk to the Allouez dock, taking approximately 4 hours, the ore cars are automatically unloaded and the iron ore is sent by conveyor belt onto the ore dock to be loaded into storage pockets holding approximately 300 tons each. Upon completion of the automatic dumping process, the engine and unit-train ore cars are free of the Butler iron ore pellets and available to service other BN customers. If an ore boat is waiting at the dock, the pellets are dropped from the pocket down a chute by gravity into the boat's hold. If an ore boat is unavailable, the iron ore pellets may be stored in the pockets. If more ore is waiting than can be maintained in the dock pockets, Butler is charged an additional handling fee of $0.11 per ton for passing the pellets through the storage yard.

The Burlington Northern, Inc., has noted that while the involved movements are highly efficient, the handling of iron ore and taconite is highly complicated, attended by unusual operating difficulties. Some of the important difficulties peculiar to the ore service follow.

Iron ores are moved to upper lake ports on the basis of weather conditions which permit the shippers to process and/or load the ores during nonfreezing weather. The ability to ship ores extends for a period of 8-9 months annually. As a result, during the "off-season," the facilities (including expensive docks, specially constructed ore cars, and dock yards) are largely idle and not generally usable for other traffic.

BN has limited capacity to thaw frozen ore in 120 cars at a time to permit dumping, which generally is required for about 30 days during November and December. The following table presents BN's recent experience in steaming of ore cars for the last 4 years:

TABLE 67

Year	Number days steam plant[1] required	Number tons steamed
1973	28	176,213
1972	30	24,447
1971	28	120,719
1970	23	128,895

[1] Steaming is not necessarily required every day during this period, but the steam plant is necessarily "idled" when not steaming cars. In addition to steaming of ore in cars, it is also necessary to use a hot water car on the dock to thaw and clean frozen ore from around the pocket doors. This requires at least three men plus a switch engine and crew of five men.

The nature of the mining operations and the necessity to keep the ore moving requires the BN to switch many loading points two or three times a day. So-called "preference" ore loaded for a closely scheduled boat often requires special handling to get it into the next road train to Allouez. At one of the mines, cars are loaded and then designated "hold" by the mining company because the ore is "off grade." These cars are then necessarily switched out and held pending advice from the mining company as to whether to "release" them or return them to the mine where they are unloaded. Such moves result in additional switching beyond what is normally required for assembling the road trains.

In 1973 BN's range transfer service served about 25 mines at 7 loading points with a daily average of 5.16 crews, working an average of 11 hours and 11 minutes and handling 17.46 cars per transfer hour. In 1973 BN had three assembly yards.

Range transfer (switching service) crews are the highest paid crews in train and engine service on the BN due to the type of work these men perform. They demanded in 1955 that they be given a special rate of pay since they contended that they had difficult working conditions. On recommendation of the National Railway Labor Mediation Board they were finally accorded this rate of pay after a strike was threatened. At the same time, these men were also accorded special arbitrary payment of 1 hour air per day because they were required to couple air hoses on ore cars. The nature of the work performed by these crews makes it necessary to work them an average of about 11 1/2 hours per day, resulting in having to pay time and a half for time over 8 hours.

The ore train operation is a one-way loaded movement from the Iron range to Allouez. Empty trains consisting, generally, of 204 empty ore cars handled with two 3,000-hp. diesel engines depart from Allouez Yard, set out at one of three locations on Mesabi range, pick up a 204-car loaded train at the same, or different, assembly point, and return to Allouez in one tour of duty averaging 10 hours.

BN performs a substantial switching and classification service at Allouez Yard to provide the necessary grading of various ores into vessels on instructions of the mining companies. This mixing service involves a large amount of additional switching in classification work in the yard and requires more tracks, more dock capacity, and more facilities and personnel than if the railway company were free to transport the ore into the holds of the vessels without instructions from the shippper as to just how this should be done. Iron ore is not of uniform chemical content or grade, and since shippers require that ores loaded into vessels meet the grade requirements of the trade, it is necessary for the railroad to follow the shippers' instructions in loading the ore into the vessels.

In BN's ore operation shippers indicate the grade in each cargo by use of a designated block number, which is also used to designate the lake vessel into which the ore should be loaded. In addition to this, shippers assign to groups of cars a suffix to the block numbers of "A," "B," "C," or "D." These letters further indicate the order in which the cars must be placed into the dock pockets. Also, shippers will identify groups of cars as "finish" which must be held on top of the dock until loading of the boat is completed and used only in case needed to complete the load so as to avoid leaving any cars of that particular block in the dock, and also to leave the kind of ore in cars which the shipper prefers in order to protect the "grade." Further, the shipper will identify certain cars as "trim" which also must be held on top of the dock, particularly for 75-foot wide boats to assure they can be loaded evenly.

The above-mentioned "finish" and "trim" cars interfere substantially with the switching operations on the dock as they block tracks during time the boat is being loaded and thereby cause interference with dispatching of cars to the dock.

Cars are classified at Allouez Yard according to all these instructions, requiring numerous cuts in the average ore train and necessitating the use of a large number of tracks for classifications.

In 1973, 22 different grades of ore from 31 mines were shipped through Allouez docks.

BN's Allouez Yard in 1973 consisted of 130 tracks with a total ore car capacity of 9,550 ore cars. These tracks were used to handle annual tonnages of 28-32 million tons during the years from 1951 through 1956. Since then ore shipments have been reduced to about 10-12 million tons per year, and BN finds its track capacity considerably in excess of current requirements. Whereas during the peak shipment years, BN had about 6,500 ore cars, 1973's shipments were handled with about 3,000 cars. As a result, BN is finding it necessary to abandon considerable yard trackage, and has currently authorized track reduction in Allouez of 26 tracks, reducing yard capacity by about 2,090 cars.

In 1973 each ore car averaged only 28.8 trips between the range and Allouez during the entire ore shipping season of 234 days. (This was actually five more trips than was obtained in each of the prior 3 years.)

The average load per car was 61.98 gross tons which indicates that each ore car handled 1,785 tons for the season and each car had an average turnaround time of abut 8.12 days.

Not included in the above average is a group of about 600 cars that are retained for repair and use in periods of peak demand.

There is considerable fluctuation in day-to-day tonnage shipped out of the ore docks. During 1973 the number of boats loaded per 24-hour period ranged from zero on many days to a high of six. This causes day-to-day variations in the entire operation including the number of cars available for loading. Further aggravating this problem is the fact that the mining companies generally work on a 5-day basis, and the dock operation works on a 24-hour-a-day, 7-day-a-week basis.

Although the handling of taconite pellets in unit train operation implies a relatively uniform operation, there are many factors which create expensive operating problems that are contrary to a standard, or routine, operation. Several of these will be discussed below.

In 1973, the BN, in serving the two pellet plants operated by Hanna Mining Co., ran unit trains weighing 12,963 gross tons, each train handled by three 3,000 hp. diesel engines. The average tons per loaded car was 69.6, and the trains averaged 186.2 loads and 3.4 empties on the return loaded movement. The average turnaround time from Allouez to the pellet plants and back was made with one crew in an average of 11 hours and 30 minutes.

Two of these statistics require explanation:

(1) The return of 3.4 empty cars per train occurs because pellet plants do not load the full train capacity which results in inefficient car utilization, and in the long run adds up to an additional train being required every 56 days at an added cost to the carrier; and

(2) The 11-hour and 30-minute average turnaround time is barely within the recently enacted law limiting train crews to a maximum of 12 hours on duty. This restriction resulted in BN having to reduce its previous operation of 204-car unit trains and to increase its motive power so that the combined running time and loading time at the pellet plants would allow one crew to make the round trip within the 12-hour maximum. Another reason the train length was reduced below the 200-car train originally operated was to reduce the number of empty cars on the return movement. These facts are indicated in the following table covering the years 1970 through 1973:

TABLE 68

Burlington Northern ore train statistics

Year	Average tons/train	Average cars/train		Average tons/car	Average turnaround time	
		Loads	Empties			
					Hours	*Minutes*
1970	14,719	200.8	5.2	73.3	12	41
1971	13,477	197.6	5.2	68.2	12	42
1972	13,477	194.6	2.9	69.2	12	43
1973	12,963	186.2	3.4	69.6	11	30

With the start of BN's taconite shipments in 1967, based on Hanna's estimated production schedule from Butler and National pellet plants, one unit train of 200 cars was available to serve the two plants on alternate days. BN at that time had 220 cars converted for this purpose including one train set plus 20 cars for spares.

Subsequent to that time, in 7 years' operation, 209 cars were lost through derailments, et cetera, or an average annual loss of about 30 cars. During these 7 years, as a result of operating experience and increased pellet plant production, sufficient cars for two sets of equipment were converted. This was an additional 360 cars including those required to replace cars lost. Present authority provides for converting an additonal 42 cars for taconite unit-train operation.

At present, BN has 365 taconite cars available for unit-train operation, which are not enough to furnish two unit trains. When two trains have to be run on the same day, approximately 1 1/2 times a week, regular ore cars are used to fill out the requirements on one train. Since these conventional cars cannot be dumped in the automatic phase at the car dump, a switch crew of five men plus an additional car dump operator is required to unload them.

In 1973 the average taconite car made 228 trips or 53,124 miles, which was 7.9 times the mileage of the average car in regular ore service. However, although the utilization is good, the miles run substantially increases normal wear and tear. Normal bad-order ratios require the ownership of 10 percent more cars than are used on each train.

There are a few factors involved in the unloading of taconite unit trains that belie the apparent simplicity of that operation. One of these is the problem of dust control in the handling of the pellets through the unloading facility via conveyor belt, a distance of 2.2 miles, to and through the docks into the boats. This is a serious environmental problem to the BN at its unloading facilities in Allouez and, subsequent to the initial completion of the facility, over $1,200,000 in capital expenditure will have been spent to control this dust problem. Operating costs are not included in this figure and include such items as applying 30,000 gallons of water to every train, four men daily to clean the conveyor system, power to operate water pumps and sprays, and belt cleaners.

Another problem which causes considerable delays at the car-unloading station and disrupts the automatic dumping operation is the prevalence of large chunks of "unformed" pellet material, scrap iron, and taconite rock, which on numerous trains will accumulate on the protective grids on the car-dump hoppers to the extent that it plugs the hoppers, preventing flow of the pellets. This requires separating the cars, manpower in the pits to break up the chunks with sledge hammers, or thawing out large pieces of taconite rock. On some trains it requires as many as three or four stops in the operation to clear the girds so dumping can proceed.

Additional problems arise when trains have an excessive amount of fines material which build up at transfer points, and in hoppers to the extent that it requires substantial manpower and equipment to clear and clean the system.

Historically, carriers have held themsleves out to load vessels from April to December. After navigation on the lakes stops, the unloading of taconite trains into stockpile is easier, but only because it is conveyed a much shorter distance; up to 3,000 feet instead of 2.2 miles. The same problems mentioned above exist at the car-unloading station and there is a necessity to provide under-car heaters to thaw the car doors.

During late season shipping it has been necessary to unload the unit trains directly into the dock rather than through the conveyor system. This is because water is necessary for dust suppression and cannot be used in freezing weather or the pellets would freeze in the dock pockets or freeze up the conveyor system to the point that it would become inoperative.

The late shipping of pellets also creates substantial expenses above summer operation, such as snow and ice removal on the docks, increased electric power consumption, and reduced labor efficiency.

Whereas the billing procedure for taconite is simpler than for regular ore, it is not a once-a-month procedure. A waybill is made for every unit taconite train and each individual waybill is a freight bill which is presented by BN to the shippers for payment on a daily basis. Tonnage for stockpile charges is computed daily, but this bill is presented to the shippers monthly.

The movement of iron ore from ex-lake or ocean docks to inland mills can be divided into three distinct operations: the dock operation where the iron ore is transloaded from the vessel to the open-top hopper cars, the round trip rail transportation of the ore cars from the dock to the mill,[13] and the dumping of the railcars at the mill.

Dock unloading devices include conveyor belts which operate in a continuous operation so that a car can be fully loaded within a matter of a few minutes or Hulett unloaders each with a bucket capacity of 20 tons. The actual unloading rate of the Huletts, including delays, is 2,500 tons per hour. An average Great Lakes ore ship carrying 19,130 tons can be unloaded in 7.6 hours. An average oceangoing ship carrying 40,000 tons can be unloaded in 16 hours. Ore unloaded via the conveyor belt is moved directly into the railcar and weighing is accomplished at the same time the car is being loaded. Ore unloaded via the Hulett unloaders is discharged first into a receiving hopper, then into a weighing hopper and finally into either a railroad car if the ore is to be shipped directly to the mill or into a transfer pit if the ore is to go into dock storage.

The movement from Cleveland, Ohio to Weirton, W. Va., will be used as an example of all ex-water line-haul movements for the purposes of this section. However, it should be recognized that the facilities at ex-water loading areas and destination mills differ. Thus, the Cleveland to Weirton movement should be considered representative but should not be considered to reflect the precise operating conditions on all ex-water movements.

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[13] In some cases the cars used to bring ore to the steel mills are moved from the mills to coal fields where they are loaded for transport back to the Great Lakes ports.

At the C&P dock in Cleveland which is owned by the Penn Central but operated by the M. A. Hanna Company, there are four loop tracks on the dock which go under the unloaders. Each loop track is capable of holding 60 cars behind the unloader and 15 cars under the unloader or a total of 300 empties for the four tracks. The movement of cars on the four tracks is controlled by electric shunts running on a narrow gauge track between each set of unloading tracks. The shunts have arms which drop on either side and engage the end sills on the cars, thus controlling the movement of two tracks serving two unloaders. The shunt engines are operated by personnel of the Hanna Co.

The C&P dock has a storage yard with a capacity of 1,200,000 tons and ore is placed into the storage yard from the transfer pit by a 613-foot long bridge crane with a bucket capacity of 15 tons. The bridge crane travels on a track built on top of concrete walls and traverses the entire 900-foot length of the dock. It is equipped with a weighing hopper and is capable of transferring 10,000 tons a day to storage or loading 10 railcars an hour from storage. Steel companies with sufficient storage areas to hold enough inventory to carry them through the period when the lakes are closed to navigation, generally 12 to 16 weeks a year, ordinarily would not use the dock storage facilities. Exceptions to this rule occur when the railroads are unable to supply sufficient numbers of cars to complete the unloading of ships.

In 1973, the C&P docks unloaded a total of 6,802,786 tons of ore. According to the Ore and Coal Exchange, Cleveland, Ohio, the dock forwarded this ore to inland consuming points in 89,620 railcars which is an average of 75.9 gross tons or 85 net tons per car.[14] The dock is operated on two shifts, 6 days a week, excluding holidays.

The Penn Central utilizes five yard crews Monday through Saturday and one crew on Sunday at Cleveland. These crews place empties on the loop track from the empty storage tracks in Riverbed Yard and pull the loads from the loaded yard where they have been placed by the shunt engines of C&P dock. At Riverbed Yard the loaded cars are placed on the train makeup tracks adjacent to the empties side of the loop tracks. When 90 loaded cars have been accumulated, a road crew is called and the cars are dispatched for the destination plants.[15] Waybilling is accomplished on an electronic terminal device with preprinted cards and one blanket waybill is prepared for the entire train. The separate charges levied for loading and unloading services at the dock will be discussed in Part VI, Matters Not Otherwise Listed.

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[14] Individual shippers report average loadings between 66 and 78.58 gross tons per car.

The road power and the cabooses for ore trains loaded at Cleveland are serviced and stored at Riverbed Yard on Whiskey Island. Riverbed Yard is not a road crew terminal and the road crews report for duty at Collinwood Yard which is on the west side of Cleveland, approximately 6 miles from Whiskey Island. They pick up the three locomotive road units on the service track at Collinwood and travel to loaded ore storage tracks at Riverbed Yard and couple their train of 90 cars. From Whiskey Island the road crew takes the train to Hudson which is a distance of 26.7 miles. Another road crew from Collinwood is called and taxied approximately 20 miles to Hudson. This crew relieves the crew that brought the train out from Whiskey Island and takes the train to Mingo Junction, Ohio, a distance of 92.1 miles from Hudson. The crew that brought the loaded train to Hudson out of Whiskey Island picks up a northbound hopper car train and returns it to Riverbed Yard on Whiskey Island. From Whiskey Island the crew is taxied back to Collinwood Yard where they sign off duty.

At Mingo Junction, Ohio, a puller yard crew is called and it takes the loaded ore train to Weirton Junction, W. Va., a distance of 5.3 miles. The train is placed on dumper tracks at Weirton Steel, and the puller crew goes to the empty storage track and collects the empties which have been on plant air and have been given an advance air test. The puller crew departs from Weirton Junction, W. Va., with the train of empty hoppers and returns to Mingo Junction, Ohio.

Weirton Steel has its own yard engines and crews which perform all of the switching within the plant confines. It receives no terminal or switching allowance for the performance of this service.[16] The switch engine crews move the cars to the dumper in 20-car cuts and as each car is dumped it is gravity dropped to a holding track. Cars are unloaded on a rotary car dumper at a rate of

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[15] Unit-train or trainload movements are the norm for shipments of iron ores; *e.g.*, individual shippers report average trains of 70-150 cars.

[16] In other cases switching services at the destination plant are performed or paid for by the line-haul railroad. Differences in sizes of trains, switching services, and freedom in car selection may account for differences in line-haul rates on seemingly similar movements.

250 cars per day by three shifts, which makes it one of the fastest unloading rates in the steel industry. Coupled with the high speed unloading rate, is the ability of Weirton's dumper to handle every type of railcar utilized for the movement of ore, including jennies, open-top hoppers, and gondolas. However, most steel mills have various weight and size restrictions on their dumping facilities which require the railroad to be selective in the type of equipment utilized for shipments to their mills. From the hold tracks, the cars are switched into Penn Central's empty interchange tracks by Weirton Steel switching crews for later pickup by Penn Central crews.

Loss and damage claims on movements of iron ores are extremely low. Alan Wood Steel Company reports that for a 2-year period, 1972-1973, its loss and damage claims totaled only $1,851.

Other efficiencies attributed to the movement of ex-water iron ores include: volume lots which maximize the revenue tonnage handled by a train crew with resulting lower line-haul costs; reduced origin, intermediate, and destination switching costs due to the large number of cars handled in each switch movement; reduced intermediate switching because of trainload movements; reduced clerical costs caused by trainload movements which require only a single bill of lading and a single freight bill; the elimination of individual car classification except for occasional bad-order cars; and the availability, at some locations, of coal to be transported back to the lake ports.

Part I(C): Transportation of iron ores

(2): Routes of movement.

As noted by the Special Projects Counsel, the vast majority of iron ore rail movements within the United States falls within three distinct types of movement. It will be the purpose of this section to examine these three main movement types in some detail, as well as to note briefly some of the lesser movements and the specific transportation data provided by the parties.

The first major railroad rate structure on iron ore consists of the movements of ore from the producing ranges in Minnesota, Michigan, and Wisconsin to the head of the Great Lakes. As noted in part I(A)(1), approximately 68 percent of ore consumed in this country is of domestic origin and approximately 80 percent of that ore originates in the Lake Superior District. Thus, over half of the movements of ore within this country originate within the Lake Superior District. With the exception of a distinct minority of all-rail movements to consuming plants, the vast majority of the ore, approximately 95-98 percent, is shipped to lakefront ports for subsequent water or water-rail movement.

Within the Lake Superior District there are two competing groups of ranges: the older mines, located on the Upper Peninsula of Michigan and in northern Wisconsin, and the newer mines located in Minnesota. The older mines are located along the Gogebic, Menominee, and Marquette ranges and the newer mines are situated on the Cuyuna, Vermillion, and Mesabi ranges. The following table shows the ports to which the ore is carried from each range by rail common carriers.

TABLE 69

Movements of iron ores to Upper Lake Ports

Range	Ports	Miles
Minneosta origins:		
Mesabi	Duluth, Minn.,	69-131
Do	Superior (Allouez Bay), Wis	79-127
Do	Two Harbors, Minn	70-92
Cuyuna	Superior (Allouez Bay), Wis	101-121
Do	Duluth, Minn	105
Michigan Origins:		
Marquette	Marquette, Mich	10-41
Do	Escanaba, Mich	64-91
Menominee	do	65-92

The various movements covered by the table above are made by the following carriers:

TABLE 70

Routing of Upper Lake Movements

Mesabi-Duluth, Duluth, Missabe & Iron Range Railway Company (DM&IR) direct or Burlington Northern Inc. (BN) - Saunders - DM&IR;
Mesabi-Superior, BN direct or DM&IR-Saunders-BN;
Mesabi-Two Harbors, DM&IR direct;
Cuyuna-Superior, BN direct or Soo Line Railway Company (Soo)-Superior-BN;
Cuyuna-Duluth, BN/Soo-Saunders-DM&IR;
Marquette-Escanaba, Chicago and North Western Railway Company (C&NW) direct or Lake Superior & Ishpeming Railroad Company (LS&I) - Ishpeming - C&NW;
Menominee-Escanaba, C&NW direct or Chicago, Milwaukee, St. Paul and Pacific Railroad Company (Milw) - Iron Mountain - C&NW;
Marquette-Marquette, LS&I direct.

The above-noted movements account for approximately 68.5 percent of all traffic from U.S. producing ranges to upper lake ports. Privately owned railroads, Reserve Mining R.R. (Reserve) and Erie Mining R.R. (Erie), handle the remainder. Reserve moves taconite ore from the Reserve mine at Babbit to the Reserve pelletizing plant at Silver Bay, Minn. Erie moves iron ore pellets to Taconite Harbor, Minn.

Specific data, discussed in later sections, has been provided by the parties with respect to the following representative movements of iron ores to upper lake ports:

TABLE 71

Representative upper lake routings

Origin	Destination	Routing
1. Palmer, Mich	Escanaba, Mich	C&NW
2. Iron River, Mich	do	Do.
3. Empire Mines, Mich	do	Do.
4. Randville, Mich	do	Milw.-Iron Mountain, Mich.-C&NW
5. Republic Mine, Mich	do	LS&I-C&NW
6. Humboldt Mine, Mich	do	Do.
7. Eagle Mills, Mich	do	Do.
8. Negaunee, Mich	Presque Isle dock, Marquette, Mich.	LS&I
9. Eagle Mills, Mich	do	Do.
10. Republic Mine, Mich	do	Do.
11. Humboldt Mine, Mich	do	Do.
12. Empire Mine, Mich	do	Do.
13. Pierce Mine, Minn	BN Allouez, Wis. docks	BN
14. Cuyuna (Rabbit Lake Mine), Minn	do	Do.
15. Canisteo Mine, Minn	do	Do.
16. Mahoning Mine, Minn	do	Do.
17. Nashwauk, Minn	Allouez dock, Wis	BN
18. Keewatin, Minn	do	Do.
19. Eveleth, Minn	Superior, Wis	DM&IR-BN
20. Delaware Mine, Minn	DM&IR Duluth, Minn. docks	BN-Saunders, Wis.-DM&IR
21. Virginia, Minn	do	DM&IR
22. Buhl, Minn	do	Do.
23. Coleraine, Minn	do	Do.
24. McKinley, Minn	do	Do.
25. Mountain Iron, Minn	do	Do.
26. Virginia, Minn	Two Harbors ore docks, Minn.	Do.
27. Buhl, Minn	do	Do.
28. Mountain Iron, Minn	do	Do.

As noted, iron ore also moves via all-rail transport from the upper lake regions to various steel mills. In addition to movements made in "emergency" situations and movements made only during peak steel production periods, significant tonnages move regularly to Illinois, Indiana, and Colorado. Data have been provided with respect to the following all-rail movements from the upper lake region.

TABLE 72

Representative all-rail routings

Origin	Destination	Routing
Black River Falls, Wis	East Chicago, Ind. (Indiana Harbor).	C&NW-Proviso, Ill.-IHB.
Randville, Mich	Granite City, Ill	Milw.-Chicago-C&NW
Iron Mountain, Mich	do	Do.
Pierce Mine, Hibbing, Minn	do	BN-East St. Louis, Ill.-TRRA
Mountain Iron, Minn	Gary, Ind	DMIR-South Itasca, Wis.-CNW-Waukegan, Ill.-EJE
Buhl, Minn	Minnequa, Colo	DMIR-Hibbing, Minn.-BN-Denver, Colo.-CS-Minnequa, Colo.-CW

The most heated arguments in regard to the freight rate structure on iron ores involve the second major group of movements, those from the lower lake ports to inland destination groups. Before discussing these movements it should be noted that significant amounts of iron ore are consumed at lakefront production facilities that require little or no rail movements after vessel transportation on the Great Lakes. Typical of such lakefront plants are the Jones and Laughlin plant at Cleveland, the Youngstown Sheet and Tube plant at East Chicago, Ind., the Republic plants at South Chicago, Ill., Cleveland, Ohio, and Buffalo, N.Y., and the Inland Steel plant at East Chicago, Ind.

There are three basic sources of ex-lake iron ore: (a) domestic ore shipped to the lakefront ports via common carrier and Great Lakes vessels; (b) domestic ore shipped to the lakefront ports via private carriage and Great Lakes vessels; and (c) foreign ore, principally from Canada. The three sources send their ores primarily to six lower lake ports: Ashtabula, Cleveland, Conneaut, Lorain, Huron, and Toledo, Ohio. From there the ores are transported inland by rail.

Evidence compiled by the Special Projects Counsel from the 1972 1-percent waybill sample indicates that of the six ports mentioned above, the most important, in terms of tonnage handled, are Ashtabula, Cleveland, and Conneaut, accounting for approximately 90 percent of ex-lake shipments. While at least three ports generally ship ore to each of the destination groups (see infra), one or two ports tend to dominate shipments to each region. The following table, based on statistics by the Special Projects Counsel, lists destination groups, the predominant port or ports and the approximate percentage of the group's ex-lake ore originating from the predominant port(s).

TABLE 73

Predominant ports for ex-lake destination groups

Destination	Predominant port(s)	Percentage
Valleys or Youngstown	Cleveland	58
Midland	Ashtabula & Cleveland	76
Pittsburgh-Wheeling	Conneaut	89
Monessen	Do	61
Johnstown	Cleveland	59
Kentucky	Toledo	77
Other Ohio	Huron	55

The destination group system will be of particular importance to later discussions of the ex-lake freight rate structure and for convenience, the points currently receiving ore within each group are listed below.

TABLE 74

Member cities in ex-lake destination groups

Youngstown group:
- Canton, Ohio
- Farrell, Pa.
- Sharpsville, Pa.
- Warren, Ohio
- Youngstown, Ohio

Hamilton-Middletown group:
- Columbus, Ohio
- Hamilton, Ohio
- Marion, Ohio
- Middletown, Ohio

Midland group:
- Aliquippa, Pa.
- Butler, Pa.
- E. Steubenville, W. Va.
- McKees Rocks, Pa.
- Midland, Pa.
- Mingo Junction, Ohio
- Neville Island, Pa.
- Steubenville, Ohio
- Weirton, W. Va.

Member cities in ex-lake destination groups—Continued

Pittsburgh-Wheeling group:
Bessemer, Pa.
Brackenridge, Pa.
Duquesne, Pa.
Follansbee, W. Va.
Homestead, Pa.
McKeesport, Pa.
Mifflin Junction, Pa.
Munhall, Pa.
Pittsburgh, Pa.
Rankin, Pa.
S. Duquesne, Pa.
Universal, Pa.
Wheeling, W. Va.

Monessen group:
Monessen, Pa.

Portsmouth group:
Ashland, Ky.
Cincinnati, Ohio
Ironton, Ohio
New Boston, Ohio
Portsmouth, Ohio

Johnstown group:
Johnstown, Pa.

Evidence has been received with respect to the following representative movements from Ohio ports to the seven destination groups.

TABLE 75

Representative ex-lake routings

Origin	Destination city and (group)	Routing(s)
Ashtabula	Youngstown (Youngstown)	P.C.
Do	Warren (Youngstown)	P.C.
Do	Weirton (Midland)	P.C.
Do	Aliquippa (Midland)	P.C.-Youngstown-P&LE
Do	Neville Island (Midland)	Do.
Do	Pittsburgh (Pittsburgh-Wheeling)	Do.
Do	Follansbee (Pittsburgh-Wheeling)	Do.
Do	Monessen (Monessen)	PC
Do	Johnstown (Johnstown)	PC
Cleveland	Youngstown (Youngstown)	EL, PC, B&O or EL-P&LE
Do	Warren (Youngstown)	EL-P&LE or RT-N&W-EL or RT-N&SS-EL or EL or PC
Do	Weirton (Midiand)	PC
Do	Aliquippa (Midland)	EL-Youngstown-P&LE or PC-Youngstown-P&LE
Do	Midland (Midland)	PC-Youngstown-P&LE
Do	Neville Island (Midland)	PC-PC&Y or EL-Youngstown-P&LE
Do	Follansbee (Pittsburgh-Wheeling)	PC-Youngstown-P&LE
Do	Monessen (Monessen)	PC
Do	Portsmouth (Portsmouth)	EL-Marion, Ohio-N&W
Do	Ashland (Portsmouth)	EL-P&LE
Do	Johnstown (Johnstown)	P.C.

Representative ex-lake routings—Continued

Origin	Destination city and (group)	Routing(s)
Conneaut	Youngstown (Youngstown)	B&LE-PC or B&LE-EL
Do	Warren (Youngstown)	Do.
Do	Pittsburgh (Pittsburgh-Wheeling)	B&LE-Bessemer-P&LE
Do	Monessen (Monessen)	B&LE-Bessemer-Union-Union Jct.-P&LE
Lorain	Youngstown (Youngstown)	B&O, N&W, PC
Do	Warren (Youngstown)	B&O
Do	Farrell (Youngstown)	B&O-Youngstown-EL
Do	Aliquippa (Midland)	B&O-Youngstown-P&LE
Do	Pittsburgh (Pittsburgh-Wheeling)	B&O
Do	Portsmouth (Portsmouth)	N&W
Huron	Youngstown (Youngstown)	N&W-EL
Do	Warren (Youngstown)	Do.
Do	Mingo Jct. (Midland)	N&W
Do	Portsmouth (Portsmouth)	Do.
Toledo	Middletown (Hamilton-Middletown)	PC, B&O, C&O-PC, or C&O-B&O
Do	Hamilton (Hamilton-Middletown)	B&O, or C&O-B&O
Do	Portsmouth (Portsmouth)	C&O-Sciotoville-B&O, B&O-C&O-B&O, C&O-Valley Crossing-N&W, PC-Bannon-N&W
Do	Ashland (Portsmouth)	C&O, PC-C&O, or B&O-C&O

In addition to ex-lake movements to the above-noted cities and destination groups, ex-lake movements of iron ores move to other inland destinations. Evidence has been received with respect to the following additional representative movements of ex-lake ores:

TABLE 76

Additional ex-lake routings

Origin	Destination	Routing
Cleveland	Parkersburg, W. Va	PC-Bellaire-B&O
Ashtabula	Henry, Va	PC-Columbus-N&W
Do	Easton (13th St.) Pa	PC-Wilkes Barre-LV

The third major group of iron ore movements consists of movements of imported ores inland from ocean ports. Evidence has been received with respect to movements of foreign ore from five U.S. customs districts: Philadelphia, Baltimore, New Orleans, Mobile, and Los Angeles. As shown in table 7 of part I(A)(1), these five ports accounted for approximately 61 percent of all imported iron ores in 1973.

Specific data, discussed in later sections, has been provided by the parties with respect to the following representative movements of imported iron ores from ocean ports:

TABLE 77

Representative import routings

Origin	Destination	Routing
Philadelphia, Pa	Bethlehem, Pa	PC direct or Reading direct or PC-Phillipsburg-N.J.-LV
Do	Swedeland, Pa	Reading direct
Do	Joana, Pa	Do.
Do	Middletown, Ohio	PC direct
Fairless, Pa	South Duquesne, Pa	PC-Butler, Pa.-B&LE
Do	Youngstown, Ohio	PC direct
Baltimore, Md	Johnstown, Pa	PC direct
Do	Youngstown, Ohio	Do.
Do	Buffalo, N.Y	Do.
Do	Cleveland, Ohio	PC direct or WMD-N&W or B&O direct
Port Covington (Balt.) Md	Bethlehem, Pa	WM-Gettysburg, Pa.-RCo.
Curtis Bay (Balt.) Md	Bristol, Va.-Tenn	B&O-Potomac Yd., Va.-SRC
Burnside, La	Harvey, La	ICG-New Orleans, La.-SP
Do	Lone Star, Tex	ICG-Baton Rouge, La.-LA-Daingerfield, Tex.-TN
Do	Fairfield, Ala	ICG-Meridian, Miss.-SRC-Birmingham, Ala.-BS or ICG-New Orleans, La.-LN-Birmingham, Ala.-BS or ICG-Aberdeen, Miss.-SLSF-Birmingham, Ala.-BS or ICG-New Orleans, La.-SCR-Birmingham, Ala.-BS.
Do	Minnequa, Colo	ICG-Shreveport, La.-LA-Dallas, Tex.-FWD-Sixela, N. Mex.-CS-Minnequa, Colo.-CW
Mobile, Ala	N. Birmingham, Ala	L&N direct or SRS direct
Do	Alabama City, Ala	L&N direct or SRS direct
Do	Birmingham, Ala	ICG direct
Do	Woodward, Ala	SRS direct
Do	Fairfield, Ala	ICG-Birmingham, Ala.-BS or SRS-Ensley, Ala.-BS
Do	Thomas, Ala	SRS direct
Los Angeles Harbor, Calif	Kaiser, Calif	SPT direct.

The final group of movements of iron ores consists of all-rail movements from U.S. producing points outside of the Lake Superior region to consuming points within the United States or to U.S. harbors for later shipment. Relatively, this final group is the least significant in terms of overall amounts shipped, but it is significant in terms of regional traffic.

Specific data, discussed in later sections, have been provided by the parties with respect to the following representative all-rail movements of domestic iron ores:

TABLE 78

Representative all-rail routings

Origin	Destination	Routing
Benson Mines, N.Y	Aliquippa, Pa	PC-Youngstown, Ohio-P&LE
Do	Cleveland, Ohio	PC direct
Joana, Pa	Bethlehem, Pa.	Rdg direct
Lumpkin, Ga	Alabama City, Ala	SCL-Montgomery, Al-L&N
Richland, Ga	Gadsden, Ala	Do.
Georgetown, Ga	Thomas, Ala	SRS direct
Do	Alabama City, Ala	Do.
Rockwood, Ala	N. Birmingham, Ala	Do.
Do	Thomas, Ala	Do.
Do	Alabama, City, Ala	Do.
Glenwood, Ala	Thomas, Ala	CGA-SRS
Do	Alabama City, Ala	Do.
Copperhill, Tenn	N. Birmingham, Ala	L&N-Chattanooga, Tenn.-TAG (SRS)-Gadsden, Ala.-L&N.
Do	Thomas, Ala	Do.
Do	Woodward, Ala	Do.
Do	Alabama City, Ala	Do. or L&N direct or L&N-SCL-L&N
Pilot Knob, Mo	Granite City, Ill	MOPAC
Pea Ridge, Mo	Alabama City, Ala	MOPAC-Memphis, Tenn.-SRS or MOPAC-SRS-TAG-AGS
Do	Burns Harbor, Ind	MOPAC-E. St. Louis, Ill-C&EI-Chicago, Ill.-CSS
Do	Middletown, Ohio	MOPAC-E. St. Louis, Ill.-PC
Do	Houston, Tex	MOPAC-Texarkana, Ark.-Tex.-T&P-Longview, Tex.-MOPAC
Do	New Boston, Ohio	MOPAC-E. St. Louis, Ill.-B&O
Do	Lone Star, Tex	MOPAC-Hope, Ark.—L&A-Daingerfield, Tex.-T&N
Do	Attalla, Ala	MOPAC-Memphis, Tenn.-SRS
Do	Birmingham, Ala	STL.-SF direct
Winton Junction, Wyo	Geneva, Utah	UP direct
Colado, Nev	Portland, Oreg	SPT direct
Do	Richland, Wash	SPT-UP
Barth, Nev	Geneva, Utah	Do.
Woody Creek, Colo	Minnequa, Colo	D&RGW-Minnequa, Colo.-C&W
Desert Mound, Utah	Geneva, Utah	UP
Comstock, Utah	Pueblo, Colo.	UP-Dvr. -D&RGW
Ferrum, Calif	Kaiser, Calif	SPT direct
Kaiser, Calif	Rillito, Ariz	Do.
Cima, Calif	LA Harbor, Calif	U

Part I(D): Transportation of iron ores (financial)

(1): General background.

It has been generally stated that since iron ore is used almost exclusively for making iron and steel, the demand for the commodity, as well as for its transport, depends entirely upon the demand for steel. When business conditions decline in the steel industry, the consumption of iron ore is lowered and there is a lesser need for rail transportation of the commodity. On the other hand, the demand for iron ore and rail transport thereof is increased during periods of industrial growth and high demand for steel. The level of rail rates on iron ore does not affect its consumption.

For the most part, we would agree that the above-noted analysis is correct. However, it is clear that like all goods and services, rail transportation of iron ores is subject to a fairly definite price elasticity curve. The effects of this curve can be seen by current or potential effects of the rail rate structure. First, as the cost of transportation is significant when compared to the value of the commodity, see infra, rail rates can affect the location of steel mills or can affect capital expansion of existing steel mills. Mill owners are likely to invest their construction dollars at locations that will offer the lowest overall costs, and rail freight rates can be a significant aspect of those costs.

Second, should freight rates become too high, at least two results could occur which would lessen demand for the service without regard to the demand for steel. First, foreign steel manufacturers would be in a position to secure a greater percentage of the U.S. market for the commodity. Second, capital expenditures for steel mill construction could be shifted toward investment in mills that utilize scrap as opposed to ores.

While there is some indication on the record that rail freight rates on iron ores have in fact influenced the geographical location of investment capital expenditures in the steel industry, there is nothing to indicate that the freight rates have harmed domestic producers to the extent that they were priced out of the market for steel. Further, there is no indication that freight rates on ore have been so high as to influence mill owners to invest in scrap utilizing mills as opposed to ore utilizing mills. The railroads appear to be cognizant of the effects freight rates can have on the businesses of the shippers and the primary consumers of iron ores and the rates set reflect this understanding of economic reality.

As noted previously, rail freight rates are not the only element of the cost of transporting iron ores. On ores produced within the Lake

Superior region, significant amounts are spent on ocean shipping, on imported ores, and on lake vessels. In addition, separate charges for services not included within the line-haul rates add to the cost of iron ore transportation. A comparison of iron ore prices and iron ore rates is found in table 79. As can be seen from column 6, the average revenue per gross ton of iron ore terminated by class I railroads in the eastern district has ranged between 23.6 and 33.1 percent of the average value per gross ton of iron ores at mines in the United States. The most recent percentage shown is 26.2 for 1973. Transportation costs are clearly of significance to the consumer.

TABLE 79

Iron ore prices v. freight rates 1956 to 1973

Year	"Iron ore price" average value per gross ton		Import	"Iron ore rate"	Iron ore price over rate		Average revenue percentage of price-column 3 divided by column 1
	At mines in U.S. (1)	Price per net ton (1a)	At country of origin (2)	Average revenue per gross ton of iron ore terminated by class I RRs in Eastern district (incl. Poca Region) (3)	U.S. (4)	Import (5)	(6)
1956	$7.47		$8.24	$2.30	$5.17	$5.94	30.8
1957	8.31		8.47	2.54	5.77	5.93	30.6
1958	8.59		8.41	2.84	5.75	5.57	33.1
1959	8.69		8.77	2.66	6.03	6.11	30.6
1960	8.73		9.31	2.61	6.12	6.70	29.9
1961	8.99		9.70	2.57	6.42	7.13	28.6
1962	8.84		9.72	2.59	6.25	7.13	28.7
1963	9.22		9.72	2.49	6.73	7.23	27.0
1964	9.52		9.93	2.65	6.87	7.28	27.8
1965	9.53		9.84	2.62	6.91	7.22	27.5
1966	9.49	$8.45	9.99	2.52	6.97	7.47	26.6
1967	9.92	8.83	9.97	2.35	7.57	7.62	23.7
1968	10.21	9.09	10.33	2.41	7.80	7.92	23.6
1969	10.34	9.20	9.88	2.49	7.85	7.39	24.1
1970	10.80	9.61	10.68	2.74	8.06	7.94	25.4
1971	11.55	10.28	11.23	3.19	8.36	8.04	27.6
1972	12.20	10.86	11.63	3.21	8.99	8.42	26.3
p1973	12.84	11.43	12.32	3.37	9.47	8.95	26.2
Average							27.7

p—Preliminary.

Authority: U.S. Bureau of Mines and ICC Freight Commodity Statistics.

Part I(D)(2): Rate structure history by territories.

While it would be beyond the scope of this proceeding to present detailed freight rate histories for each of the hundreds of rates submitted by the parties as representative, it is important at least to offer a general overview of historical developments in the structure nationwide, historical developments by territory, and specific factors that have affected individual rates.

Ex parte increases on iron ores between June 6, 1917 (Ex Parte No. 57), and June 20, 1974 (Ex Parte No. 305-A), are presented in table 80. An analysis of that table and earlier general increase cases indicates that the Commission generally has authorized three types of increases. First, increases have been allowed on a flat-cents-per-ton basis in Ex Parte Nos. 57, 223, and 256. Second, increases have been allowed on a percentage basis with a flat-cents-per-ton holddown in Ex Parte Nos. 166, 168, 212, 259, 281, and 295. Third, increases have been allowed on a flat percentage basis in Ex Parte Nos. 74, 115, 162, 175, 196, 206, 262, 265, 267, 299, 303, and 305. The effects that different types of ex parte increases can have upon competitive situations will be discussed in the section dealing with the freight rate structure of ex-lake movements.

The rate structure from upper lake producing areas has had a long and involved history which cannot be presented in full in this proceeding. However, general background material presented by the parties is helpful in understanding the current rate structure. As noted by the Special Projects Counsel, the producing ranges may be divided into two categories: first, the older mines located on the Upper Peninsula of Michigan and northern Wisconsin including the Gogebic, Menominee, and Marquette ranges; and, second, the newer mines located in Minnesota including the Cuyuna, Vermillion, and Mesabi ranges. The rate structure for this region has always favored the older mines because of poorer quality ores and shorter distances to the lakes. The Ashland-Escanaba adjustment is also of historical interest in that it reflected the fact that ore boats from Ashland had to pass through the Sault Ste. Marie canal thus making lake shipment via Ashland more expensive. However, ore arriving at the Ashland docks was considered to be of better quality and as the two factors were offsetting, rates to the two ports were generally equalized. For mines within producing ranges, mileage has generally been the prime determinant of rate differentials.

TABLE 80

Statement of general increases sought by carriers and those increases authorized by the Interstate Commerce Commission on iron ores

Ex Parte No.	*Increase authorized*
57	**Published effective June 6, 1917—15 cents flat increase**
74	**Published effective Aug. 26, 1920—40 percent increase**
115	**Published effective Nov. 15, 1937—6 percent increase**
162	**Published effective Jan. 1, 1947—12 percent increase**
166	**Published effective Aug. 21, 1948—20 percent increase, maximum 34 cents gross ton.**
168	**Published effective Sept. 1, 1949—10 percent increase, maximum 39 cents gross ton.**
175	**Published effective Dec. 1, 1955—12 percent increase**
196	**Published effective Mar. 7, 1956—6 percent increase**
206	**Published effective Aug. 26, 1957—14 percent increase**
212	**Published effective Feb. 15, 1958—10 percent increase, maximum 25 cents gross ton.**
223	**Published effective Sept. 1, 1962—10 cents per net ton 11 cents per gross ton[1] 20 cents per net ton[2] 22 cents per gross ton.[2]**

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[1] On rates not exceeding \$13 per net or gross ton.

[2] On rates exceeding \$13 per net or gross ton.

Ex Parte No.	Increase sought	Increase authorized
256:		
All rates	By petition filed May 18, 1967 10 cents per ton, net or gross as rated. (See exceptions).	Published effective Aug. 19, 1967, 10 cents per ton, net or gross as rated. (See exceptions).
Exceptions		
(1) Ex-Lake Iron Ore from Lake Erie Ports on shipments of direct ore or dock ore tendered at one time from one consignor to one consignee and to not more than two destinations, aggregating not less than 10,000 tons each during the open season of navigation and not less than 1,500 tons each during the lake off season.	30 cents per ton, net or gross as rated.	10 cents per ton, net or gross as rated.
(2) Rail factor to upper Lake Ports for transshipment to Lake Erie Ports and thence by rail to interior destinations.	5 cents per ton, net or gross as rated.	5 cents per ton, net or gross as rated.

TABLE 80 (CON.)

Ex Parte No.	Increase sought	Increase authorized
Exceptions—Continued		
(3) Ex-Lake Iron Ore which had a prior rail and water haul under conditions in (2), moving by rail from Great Lakes Ports, other than described in (4).	5 cents per ton, net or gross as rated.	5 cents per ton, net or gross as rated.
(4) Ex-Lake Iron Ore which had a prior rail and water haul under conditions in (2)), from Lake Erie Ports on shipments of direct ore or dock ore tendered at one time from one consignor to one consignee and to not more than two destinations, aggregating not less than 10,000 tons each during the open season of navigation and not less than 1,500 tons each during the lake off-season.	25 cents per ton, net or gross as rated.	5 cents per ton, net or gross as rated.
259	By petition filed Mar. 7, 1968.	Published effective Nov. 28, 1968—X-259-B.
All rates	5 percent, max. 20 cents per ton, net or gross as rated.	5 percent, max. 20 cents per ton net or gross as rated.
262	By petition filed Oct. 10, 1969.	Published effective Nov. 18, 1969.
All rates	6 percent	6 percent
265	By petition filed Mar. 3, 1970.	Published effective Nov. 20, 1970—X-265-B.
All rates	6 percent	6 percent
267	By petition filed Sept. 1, 1970.	Published effective Apr. 12, 1971—X-267-B.
All rates	15 percent	14 percent (except 12 percent on import traffic and 6 percent in Southern Territory).
281 (Surcharge)	By petition filed Dec. 12, 1971.	Published effective Feb. 5, 1972. Expired Oct. 22, 1972.
All rates	2 1/2 percent	2 1/2 percent
281	By petition filed Feb. 27, 1972.	Published effective Oct. 23, 1972—X-281-B.
All rates	4 percent, max. 22 cents G.T.	5 percent except 4 percent in Southern and 4 percent, max. 22 cents G.T. in official territory.
295	By petition filed Apr. 20, 1973.	Published effective Aug. 19, 1973—X-295-A.

TABLE 80 (CON.)

Ex Parte No.	Increase sought	Increase authorized
Exceptions—Continued		
All rates	5 percent	3 percent except, 3 percent max. 22 cents G.T. between stations in Eastern Territory, between stations in tions in Eastern Territory and stations in Southern Territory and between Eastern and Western Territories.
299		Published effective Mar. 16, 1974—X-299-A.
All rates	2.8 percent	2.8 percent surcharge subject to exceptions.
303	5 percent in Eastern and Western Territories.	Published effective Mar. 9, 1974—X-303-A.
All rates	4 percent in Southern Territory.	4 percent increase subject to exceptions.
305		Published effective June 20, 1974—X-305-A.
All rates	3.3 percent then 10 percent.	3.3 percent then 10 percent subject to exceptions.

There is also some indication that railroads have recognized that lower rates may spur production and increase traffic from individual mines or ranges. Rates from Marquette mines to the port of Marquette were lowered at one point because of decreased output at the higher rate level.

The Lake Superior shippers have stated that rates generally have been based upon the following factors:

1. type of service (single-car or unit train);
2. charges for loading of vessels;
3. handling and storage charges;
4. refunds for shipments with ex-lake movements;
5. minimum annual volumes;
6. negotiations dealing with annual volume rates on pellet shipments based upon:
    a. volume,
    b. frequency of movement,
    c. distance,
    d. time for loading and unloading, and
    e. car requirements;

7. specific escalation provisions based upon cost indixes in lieu of ex parte increases in negotiated agreements;
8. bonding for failure to meet annual volume requirements; and
9. hourly delay penalties.

While Mesabi range producers generally are served by only one carrier and long-term contracts for service are the norm, Marquette range producers more often may be served by more than one line which creates competition among the railroads. Some ex parte increases were waived by the carriers in order to maintain their competitive positions. It also appears that negotiated annual volume rates have increased less over time than have rates which have borne the full general increases approved by the Commission.

With the exception of annual volume negotiated rates, tables 82 through 85 showing various measurements of the upper lake freight rate structure may be expanded by the following summary of the application of ex parte increases from three of the major producing areas:

TABLE 81

Application of ex parte increases to upper lake movements

Producing ranges	Application of ex parte increases
Mesabi & Cuyuna	All increases applied in whole or in part except Ex Parte No. 267-A.
Menominee & Marquette origins to Escanaba.	All increases applied in whole or in part except Ex Parte Nos. 259-A, 259-B, and 267-A.
Marquette-Marquette	No increases applied except some or all of the increases authorized under Ex Parte Nos. 256 and 262 and one increase in April 1974 not under an ex parte proceeding.

The western railroads have presented a slightly different picture of the rationale for the current freight rate structure in the upper lake region. In general they maintain that rates are set primarily to meet the economic needs of the shippers, to meet import competition, to meet carrier competition, *e.g.*, "hook and haul" rates, and to reflect the transportation characteristics of the involved movements. Rates are negotiated with shippers and determined based on the above-noted factors, the preexisting rate levels and previous Commission decisions.

TABLE 82

Rail Freight Rates on Iron Ore and Pellets to Upper Lake Ports
*1930-1973**

Average Distance	From	To	1/1/16	7/28/17	1930	1940	1960	1966	As of April 15 1969	1972	1973	Percent 1966 to 1973	Increase 1969 to 1973
						Cents			*Cents*				
	Ore:												
60	Marquette Range----	Escanaba, Mich------	45	51	72	78	125	125	135	170	179	43	33
43-90	Menominee Range----	---------do---------	45	51	72	78	125	125	135	170	179	43	33
75	Mesabi Range-------	Duluth-Superior-----	55	63.5	81	81	128	128	145	183	192	50	32
100	Cuyuna Range-------	Superior------------	55	63.5	81	81	128	128	145	183	192	50	32
	Pellets (Volume Rates):												
106-124	Mesabi-Mashwauk, etc.	Allouez-Duluth------	55	63.5	-----	-----	-----	-----	137	160	170	-----	24
	-Thunderbird Mine	Duluth-Superior-----	-----	------	-----	-----	-----	-----	159	185	195	-----	23
	Randville, Mich----	Escanaba, Mich------	-----	------	-----	-----	-----	-----	95	95	95	-----	0

*Source: Skillings Mining Review, July 19, 1930; June 29, 1940; July 16, 1960; and Mining Directory, Univ. of Minn. Bulletin, 1966, 1969, 1972, 1973.
Excludes all dumping or other dock charges.

TABLE 83

Ex parte increases applied to iron ore from upper lake shipping points

Number	Effective date	Line haul increase	Handling increase	Storage increase	Hold-to-rail of vessel increase
				(percent)	*(percent)*
X-256	Aug. 19, 1967	10¢ net or gross (5¢ each end rail-lake-rail)	1/2¢ G. T.	5	[1]No increase
			(percent)		
X-259-B	Nov. 28, 1968	5% (Max. 20¢ net or gross)	6	6	Do.
		(percent)			
X-262	Nov. 18, 1969	6	6	6	Do.
X-265-B	Nov. 20, 1970	6	6	6	6
X-267-B	April 12, 1971	12	12	12	[1]No increase
X-281	July 29, 1972	5	5	5	5
X-295-A	Aug. 19, 1973	3	3	3	3
X-299	Oct. 1, 1973	1.9	1.9	1.9	1.9
X-299	Jan. 1, 1974	2.6	2.6	2.6	2.6
X-301	Jan. 31, 1974	2.1	[1]No increase	[1]No increase	2.1
X-301-A	Mar. 9, 1974	2.5	do	do	2.5
X-303-A	Mar. 9, 1974	4	4	4	4
X-299-A	Mar. 16, 1974	2.8	2.8	2.8	2.8
X-301-B	Apr. 1, 1974	2.8	[1]No increase	[1]No increase	2.8
X-301-C	May 1, 1974	3	3	3	3
X-301-D	June 1, 1974	3.3	3.3	3.3	3.3

[1] Denotes no increase.

TABLE 84

Upper lake iron ore rates

Subject to Ex Parte Increases

Ex Parte increase	Effective,[1] date	Jackson County Iron Co. to Indiana Harbor[3]	Sherwood to Escanaba[3]			Empire to Escanaba[3]			Butler to Superior[4]		
		All rail	*Rail*	*Dock*	*Total*	*Rail*	*Dock*	*Total*	*Rail*	*Dock*	*Total*
Prior to X256		---------	1.25	.19	1.44	.92	.12	1.04	1.08	.12	1.20
X256------	Aug. 19, 1967------	---------	1.35	.195	1.545	1.02	.125	1.145	1.18	.12	1.30
X259-B----	Nov. 28, 1968------	2.15	1.35	.20	1.55	1.07	.13	1.20	1.24	.13	1.37
X262------	Nov. 18, 1969------	2.28	1.43	.21	1.64				1.31	.14	1.45
X265-B----	Nov. 20, 1970------	2.42	1.52	.22	1.74						
X267-B----	Apr. 12, 1971------	2.71	1.70	.25	1.95						
X281------	July 29, 1972------	2.85	1.79	.26	2.05	All subsequent increases were made according to escalation provisions. For details see Appendix C.					
X295-A----	Aug. 19, 1973------	2.94	1.84	.27	2.11						
X299-A----	Mar. 16, 1974------	3.02	1.89	.28	2.17						
X303-A----	Mar. 9, 1974-------	3.14[2]	1.97	.29	2.26[2]						
X301-D----	June 1, 1974-------	3.14[2]	1.97	.29	2.26[2]						

[1] Published to be effective Sept. 29, 1969.
Shipment Minimum Weight 1,786 G.T. Annual Minimum Weight 675,000 G.T.

[2] Plus 3.3 percent surcharge.

[3] Tariff CNW 5175-C.

[4] Tariff BM 31-A.

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TABLE 85

Upper lake iron ore rates

Subject to escalation agreement			
Date	[5]Empire to Escanaba	Date	[2] [6]Butler to Superior
April 4, 1969	0.95	April 1, 1970	1.43
April 4, 1974	[3]1.30	April 1, 1972	1.60
		April 1, 1973	1.70
		April 1, 1974	[4]1.85

[1] Shipment minimum weight 5,000 G. T. Annual minimum 2,210,000 G. T.

[2] Shipment minimum weight 12,000 G. T. Annual minimum 4,500,000 G. T.

[3] Rate is $1.42, plus 7¢ per month storage for tonnage shipped during winter.

[4] $1.94 if pellets are placed in ground storage, plus 1.21¢ per month storage, plus 2¢ if ore is weighed by R.R.

[5] Tariff CNW 5175-C.

[6] Tariff BN 31-A.

Transportation characteristics, as defined by the western railroads include the following factors:

Origin service factors:
- a. trackage necessary to reach mine,
- b. loading method,
- c. loading time,
- d. loading schedule.

Line-haul service factors:
- a. train schedule
- b. routing
- c. train size
- d. trackage upgrading
- e. trackage grades
- f. annual tonnage
- g. traffic density over routing
- h. interchange facilities
- i. types of car ownership
- j. train labor characteristics.

Destination service factors:
- a. trackage necessary to reach receiver
- b. unloading method
- c. unloading time
- d. unloading schedule
- e. transloading facilities.

The all-rail movements from upper lake production points mentioned in earlier sections have created a freight rate structure based on somewhat different factors than the mine to lake rates discussed above. All rail rates to Granite City, Ill., at one time originated from the Gogebic and Menominee ranges, on the one hand, and from the Baraboo District in southern Wisconsin, on the other. The Baraboo rates were lower to reflect lesser distances. Granite City was grouped with St. Louis and East St. Louis as early as 1921 to allow producers there to compete with other steel producers in the same geographic region and lower rates were initiated in 1926 in order to allow producers in the region to compete with lakefront mills and to obtain Mesabi ore. The availability of empty coal cars going to southern Illinois was another factor making lower rates possible. Information presented by the parties indicates that all-rail rates from the upper lake production points to the Granite City region have all borne all ex parte increases with the exception of BN origins in the Mesabi range.

As indicated in part I(C)(2), significant issues have been raised with respect to the freight rates on ex-lake shipments of iron ore to the destination groups in Ohio and Pennsylvania. The genesis of these arguments, for the purpose of this discussion, lies in the prescription of destination groupings in *Iron Ore Rate Cases*, 41 I.C.C. 181 (1916), 44 I.C.C. 368 (1917), and 48 I.C.C. 650 (1918). It should be noted that the issue of destination groupings per se is not being raised again in this proceeding. None of the parties have indicated any dissatisfaction with the makeup of the groups. However, serious arguments have arisen with respect to the effect of general freight rate increases on the rate structure established in those cases.

Before dealing directly with the issues raised by the parties, a few background facts should be noted. First, ex-lake rate groups are primarily mileage oriented although equalization of origin ports and points within multiple-destination groups occasionally clouds the mileage-rate relationships. While extended arguments have been heard in the past with regard to an "assembling cost" theory of ratemaking, these arguments have been rejected in a number of Commission cases and the only vestige that remains of the "assembling cost" principal arises as a result of the geographic happenstance that steel mills which are closer to their source of iron ores are generally further from their source of coal.

Second, only a limited number of changes have occurred in the freight rate structure established almost 50 years ago.[17] Primarily, these changes have come about as a result of ex parte increase cases. Secondary influences appear to include an attempt to maintain a nonquantified "fair" relationship between iron ore rates and the rates on another bulk commodity, coal, and an attempt to retain Pittsburgh, and Johnstown steel producers as consumers of ex-lake ores as opposed to ores imported to Philadelphia or Baltimore.

Third, the introduction of reduced multiple-car rates from Cleveland to Ohio and Pennsylvania consumption points approved by the Commission in 1965 brought about significant nomenclature changes in the tariffs as well as a 20-cent-per-ton reduction in the then prevailing rates.

Finally, Ex Parte No. 256, *Increased Freight Rates, 1967*, 329 I.C.C. 854 (1967), and 332 I.C.C. 280 (1968), represented an attempt by the carriers to recoup the 20-cent reduction per ton offered 2 years earlier as well as securing an additional 10-cent-per-ton increase. The carriers requested a 5-cent increase on movements to upper lake ports, a 25-cent increase on ex-lake ore that had had a prior regulated rail movement, and a 30-cent increase on iron ore that had not had a prior rail movement. The Commission authorized a 5-cent increase on the upper lake movement, a 5-cent increase on ex-lake movements that had had a prior regulated rail movement, and a 10-cent increase on ex-lake movements that had not had a prior regulated movement. Thus, differing levels of rates began to apply on ex-lake movements and the reduction given by the carriers to multiple-car movements was retained.

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[17] As initially published, the multiple-car rate was subject to a minimum of 10,000 gross tons for the period April 16 to November 15 of each year (open navigation season). The minimum is 1,000 gross tons for the period November 16 to April 15 of each year (closed navigation season). In June and July 1972 the 10,000 gross ton minimum was reduced to 5,000 gross tons.

Tables 86, 87, and 88 chart the history of ex-lake rail rates on iron ores for movements having a prior regulated rail haul, movements not having a prior regulated rail haul, and movements of imported ores. These tables also measure the percentage increases each destination group has borne over the years as well as noting the changes in the rate relationships between the groups. Percentage increases and rate relationships have clearly been affected by the imposition of general freight rate increases on a flat-cents-per-ton basis or on a percentage basis with a flat-cents-per-ton holddown.

These tables point out the well-documented fact that the cents-per-ton differentials and the rate relationships between various destination groups have been significantly altered over the years. Destination groups closer to the ex-lake ports have borne greater percentage increases than have destination groups at greater distances and the latter groups have borne greater increases when judged on a cents-per-ton standard. Each party to the proceeding receiving ex-lake ore has pointed to the changes as "evidence" that its group has been harmed by the cumulative effects of the general increase cases. In addition, parties representing consumers of iron ores in the Youngstown-Warren group maintain that these cumulative changes have violated Commission prescribed rate relationships in the *Iron Ore* cases, *supra*.

While it is clear that the language of the *Iron Ore* cases prescribed rates and rate relationships on ex-lake movements of iron ores, it is beyond cavil that the Commission did not intend to be understood as saying that the rates prescribed could not change in the face of altered transportation circumstances and costs. It seems equally clear that the Commission should not be interpreted as having said that the rate relationships prescribed could not be changed in light of changing patterns of movement, changing costs, and changing transportation circumstances.

TABLE 86

Ex-lake rates on iron ore having prior regulated rail movement at ex parte increase levels, 1917-1974
(Rates per GT-5,000 GT min. per shipment)

Average miles from lake ports	Destination group	1917 Base	July 1, 1966	X223 Jan. 23, 1967	X256 Aug. 19, 1967	X259 May 27, 1968	X262 Nov. 18, 1969	X265 June 9, 1970	X267 Nov. 20, 1970	X281B Oct. 23, 1972	X295A Aug. 23, 1973	X299 Jan. 1, 1974	X303 Mar. 9, 1974	X299 Mar. 16, 1974	Y305A June 20, 1974	Percent increase				Percentage relationship of rates Youngstown rate as 100-base				
																1917 to X295A	1917 to 1974	1966 to 1973	1966 to 1973	1917	X256	X295	X303	X305A
63	Youngstown	50	208	188	193	203	215	228	260	270	278	285	296	297	338	456	576	34	29	100	100	100	100	100
N.A.	Leetonia	55	219	199	204	214	227	241	275	286	295	303	315	316	360	436	555	35	30	110	106	106	106	106
100-124	Midland	64	239	219	224	235	249	264	301	313	322	331	343	344	391	403	511	35	27	128	116	116	116	116
145	Pittsburgh	76	273	253	258	271	287	304	347	361	372	382	397	397	451	389	493	33	25	152	134	134	134	133
170	Monessen	82	286	266	271	285	302	320	365	380	391	401	417	418	475	377	479	37	29	164	140	141	141	141
220-237	Ashland, Ky. Portsmouth	84	293	273	278	292	310	329	375	390	402	413	429	430	488	379	481	37	30	168	144	145	145	144
N.A.	Hamilton	84	293	273	278	292	310	329	375	390	402	413	429	430	488	379	481	37	30	168	144	145	145	144
186	Johnstown	88	302	282	287	301	319	338	385	400	412	423	440	441	502	368	470	36	29	176	149	148	148	149
N.A.	Lehigh & Schuylkill Valleys Group	145	423	403	408	428	454	481	548	570	587	602	625	627	713	305	392	39	29	278	211	211	211	211
N.A.	Sparrows Point	150	423	403	408	428	454	481	548	570	587	602	625	627	713	291	375	39	29	288	211	211	211	211

Adjusted to reflect 48 I.C.C. 650.

TABLE 57

Ex-lake volume rates on iron ore having no prior regulated rail movement at ex parte increase levels, 1917-1974
(Rates in cents per gross ton)
(5,000 GT min. per shipment)

Average miles from Lake Ports	Destination group	1917 basis	July 1, 1966	X223 Jan 23, 1967	X256 Aug. 19, 1967	X259 May 27, 1968	X262 Nov. 18, 1969	X265 June 9, 1970	X267 Nov. 20, 1970	X281B Oct. 23, 1972	X295A Aug. 23, 1973	X299 Jan. 1, 1974	X303 Mar. 9, 1974	X299 Mar. 16, 1974	X305A June 20, 1974	Percent increase: 1917 to X295A	Percent increase: 1917 to 1974	Percent increase: 1966 to 1973	Percent increase: 1969 to 1973	Percentage relationship of rates Youngstown rate as 100-base: 1917	X256	X295	X303	X305A
63	Youngstown	50	208	188	198	208	220	233	266	277	285	292	304	305	347	470	594	37	30	100	100	100	100	100
NA	Leetonia	55	219	199	209	219	232	246	280	291	300	308	321	322	367	445	567	37	29	110	106	105	106	106
100-124	Midland	64	239	219	229	240	254	269	307	319	329	338	351	352	400	414	525	38	30	128	116	115	115	115
145	Pittsburgh	76	273	253	263	276	293	311	355	369	380	390	406	407	462	400	508	39	30	152	133	133	133	133
170	Monessen	82	286	266	276	290	307	325	371	386	398	408	424	425	483	385	489	39	30	164	139	140	139	139
220-237	Ashland, Ky-Portsmouth	84	293	273	283	297	315	334	381	396	408	419	435	436	495	386	489	39	30	168	143	143	143	143
NA	Hamilton	84	293	273	283	297	315	334	381	396	408	419	435	436	495	386	489	39	30	168	143	143	143	143
180	Johnstown	88	302	282	292	307	325	345	393	409	421	432	449	450	512	378	482	39	30	176	147	148	148	148
NA	Lehigh & Schuylkill Valley Group	145	423	403	413	433	459	487	555	577	594	609	633	635	722	310	390	40	26	270	208	208	208	208
NA	Sparrows Point	150	423	403	413	433	459	487	555	577	594	609	633	635	722	296	383	40	26	288	208	208	208	208

Iron Ore Rates cases, 41 I.C.C. 181, 219, prescribed a rate of 80 cents for a combined Monessen-Johnstown Group.

The Grouping of Monessen and Donora, 40 I.C.C. 650, removed these points from the Johnstown Group and prescribed a rate not greater than 6 percent higher than the Pittsburgh Group.

TABLE 88

Import rates on iron ore from Canada at ex parte increase levels, 1917-1974
(Rates per GT—5,000 GT min. per shipment)

Average miles from lake ports	Destination group	1917 Basis	July 1, 1966	X223 Jan. 23, 1967	X256 Aug. 19, 1967	X259 May 27, 1968	X262 Nov. 18, 1969	X265 June 9, 1970	X267 Nov. 20, 1970	X281B Oct. 23, 1972	X295A Aug. 23, 1973	X299 Jan. 1, 1974	X303 Mar. 9, 1974	X299 Mar. 16, 1974	X305A June 20, 1974	Percent increase				Percentage relationship of rates Youngstown rate as 100-base				
																1917 to X295A	1917 to 1974	1966 to 1973	1969 to 1973	1917	X256	X295	X303	X305A
63	Youngstown	50	208	188	198	208	220	233	261	271	279	286	297	298	339	458	578	34	27	100	100	100	100	100
NA	Leetonia	55	219	199	209	219	232	246	276	287	296	304	316	317	361	438	556	35	27	110	106	106	106	106
120-124	Midland	64	239	219	229	240	254	269	301	313	322	331	343	344	391	403	511	35	27	128	116	115	115	115
145	Pittsburgh	76	273	253	263	276	293	311	348	362	373	383	398	398	452	391	495	33	24	152	133	134	134	133
170	Monessen	82	286	266	276	290	307	325	364	379	390	400	416	417	474	376	478	36	27	164	139	140	140	140
220-237	Ashland, Ky. Portsmouth.	84	293	273	283	297	315	334	374	389	401	412	427	428	486	377	479	37	27	168	143	144	144	143
NA	Hamilton	84	293	273	283	297	315	334	374	389	401	412	427	428	486	377	479	37	27	168	143	144	144	143
186	Johnstown	88	302	282	292	307	325	345	386	401	413	424	441	442	503	369	469	37	27	176	147	148	148	148
NA	Lehigh & Schuylkill Valley Group.	145	423	403	413	433	459	487	545	567	584	599	622	624	710	303	390	38	27	290	209	209	209	209
NA	Sparrows Point	150	423	403	413	433	459	487	545	567	584	599	622	624	710	289	373	38	27	300	209	209	209	209

Adjusted to reflect 48 I.C.C. 650.

After almost 50 years it would be improper at best for the Interstate Commerce Commission simply to order a return to 1916 rate relationships. We are clearly obliged in this proceeding to analyze the freight rate structure with the means and methods currently at our disposal. In part III of this report, we will discuss the methodology selected for analyzing the current freight rate structure on ex-lake iron ores and what steps are deemed necessary to determine the need for adjustments in that structure.

The final rate structure with official territory origins on which information has been received in this proceeding involves rates on ores imported through North Atlantic ports. Rates on ores imported through Baltimore with destinations in southern territory apparently were originally based at 7.5 percent of docket No. 28300 first class rates. This figure was carried over from earlier import movements to the same destinations from Newport News, Va.

Import rates on ores with destinations in official territory have had a somewhat more complex history. Two port areas, Philadelphia and Baltimore, are the sources of import ore for official territory. Rates from these ports have been equalized with exceptions noted later. In addition, the port of New York has been given rate equality although facilities have never been established there for the handling of the ores. Boston has been denied rate equality because of significantly greater distances and costs involved to consuming points.

While rates from Philadelphia and Baltimore have been equalized to "differential territory" (See *Iron Ore from Eastern Ports to C.F.A. Points*, 321 I.C.C. 473), Philadephia origins have lower rates to points east of differential territory and Baltimore origins have lower rates to points west of differential territory. Rates on import ore to Bethlehem and Swedeland are not related to rates to differential territory.

Table 89 presents a brief history of the freight rate structure from Philadelphia and Baltimore to some of the largest consumers of iron ores imported through these two ports. Two factors should be noted. First, increases applied between July 1, 1966, and 1973 have affected each of the involved rates almost equally. The largest disparities lie between the Philadelphia to Middletown rate (up 43 percent) and the Philadelphia to Bethlehem rate (up 49 percent). Second, the rate relationships between the points considered, using Monessen, Pa., as a base, fluctuate rarely. The maximum fluctuation appears to be 2 percent.

TABLE 89

Import rates on iron ore through north Atlantic ports at Ex Parte increase levels, 1966-1973
(Rates in cents per gross ton)

From Baltimore, Md. Philadelphia, Pa. to:	July 1, 1966	X256 (10 cents per ton) Aug. 19, 1967	X259 (5 percent max. 20 cents) May 27, 1968	X262 (6 percent) Nov. 18, 1969	X265B (6 percent) Nov. 20, 1970	X267B (12 percent) April 12, 1971	X281B (4 percent max. 22 cents) Oct. 23, 1972	X295A (3 percent max. 22 cents)	Percent Increase 1966 to 1973	Percent Increase 1969 to 1973	Rate relationships from Philadelphia and Baltimore to destination points In 1966 and 1973 Monessen = base of 100: 1966	Rate relationships from Philadelphia and Baltimore to destination points In 1966 and 1973 Monessen = base of 100: 1973
Monessen, Pa	362	372	391	414	439	492	512	527	46	27	100	100
Johnstown, Pa. X	350	360	378	401	425	476	495	510	46	27	96	97
Johnstown, Pa. Z	391	401	421	446	473	530	550[1]	567[1]	45	27	108	108
Pittsburgh, Pa	376	386	405	429	455	510	530	546	45	27	104	104
Midland, Pa	389	399	419	444	471	528	549	565	45	27	107	107
Youngstown, Ohio	403	413	433	459	487	545	567	584	45	27	111	111
Cleveland, Ohio	430	440	460	488	517	579	601	619	44	27	119	117
Ashland, Ky. Portsmouth, Ohio	425	435	455	482	511	572	594	612	44	27	117	116
Middletown, Ohio	452	462	482	511	542	607	629	648	43	27	125	123
Canton-Massilon, Ohio	430	440	460	488	517	579	601	619	44	27	119	117
From Philadelphia, Pa. to: Bethlehem, Pa	199	209	219	232	246	276	287	296	49	28	55	56

X - From Baltimore, Md.
Z - From Philadelphia, Pa.
1 - Rate published in B&O ICC 25077, subject to X295A increase (making rate 567).
(Believe rates should be 551 and 568).
Tariff Auth: CTR-TB Freight Tariff T/C 754, ICC C-454, except to Johnstown, Pa., B&O ICC 24789, 25077 B&O ICC 24637, 25077.

The final freight rate history to be considered in this section concerns movements of iron ores, both imported and domestic, originating within the southern territory. While all of the parties agree that there is no generally recognized basis for setting iron ore rates in this territory, patterns of development based on common competitive circumstances may to shown to explain the current structure.

Whenever economically possible, the involved railroads have sought to remain competitive with each other and with intermodal competition from barges. For example, rail rates from Mobile to Birmingham, originally set to be somewhat in line with rates for similar distances from Lake Erie ports to points in Kentucky and Ohio, as well as rates from Mobile to Alabama City, have been adjusted downward to meet barge competition and to reflect competition between steel producing points.

These adjustments on imported ores have necessitated further adjustments on domestic ore rates to allow U.S. producers of ore to compete with foreign ores. Rates from Pea Ridge, Mo., and Copperhill, Tenn., to Alabama City, Gadsden, Birmingham, N. Birmingham, Thomas, and Woodward, Ala., all reflect this type of adjustment.

These adjustments in turn have led to further adjustments to rates from competing production points within the South. Included among these points are Rockwood and Glenwood, Ala., and Georgetown, Ga.

Beyond barge competition, rail competition, and competition between shippers and receivers of iron ores, a number of other factors has been presented as having had some influence in the past on the freight rate structure. Given the point-to-point nature of the rates and the numerous adjustments that have been made, these factors are probably only of historical interest. Included among these factors are: (1) the Alabama Furnace Material Scale, (2) the Georgia-Alabama Iron Ore Scale, and (3) the Texas Intrastate Sand & Gravel Scale.

Tables 90 and 91 present a history of import rates in southern territory for the period between July 1, 1966 and the effective date of Ex Parte No. 295 as well as a history of ex parte increases applied on movements within southern territory for the same period.

TABLE 90

Statement showing import rates on iron ore, C.L., from Gulf and South Atlantic ports to Alabama City, Ala., and Birmingham, Ala., group points in effect July 1, 1966, and through X-295-A

(Rates in cents per net ton)

To § Alabama City, Ala. from	Description and minimum weight	Rate in effect July 1, 1966	X-256 Group 309 10 cents NT or GT Aug. 19, 1967	X-256 (final) Group 309 10 cents NT or GT Mar. 18, 1968	X-259-A item 1060 3 percent - max. 20 cents NT or GT June 24, 1968	X-259-B (interim) item 1060 5 percent - max. 20 cents NT or GT Nov. 28, 1968	X-259-B (final) item 1060 5 percent - max. 20 cents NT or GT Jan. 30, 1969
New Orleans, La.-------- Mobile, Ala.[1]-----------	A B C	320 238 213	330 248 223	330 248 223	340 255 x *223	347 260 *223	347 260 *223
Jacksonville, Fla.) Brunswick, Ga.) Savannah, Ga.) Charleston, S. C.)	A	331	341	341	351	358	358
To §§ Birmingham, Ala. from							
New Orleans, La.-------- Mobile, Ala.[1]-----------	A B C	320 238 213	330 248 223	330 248 223	340 255 x *223	347 260 *223	347 260 *223
Jacksonville, Fla.) Brunswick, Ga.) Savannah, Ga.) Charleston, S. C.)	A	331	341	341	351	358	358

[1] Rates from Mobile apply to Alabama City, Attalla, Birmingham and Gadsden, Alabama.

To § Alabama City, Ala. from	Desc. and min. wt.	Rate in effect July 1, 1969	X-262 6 percent Nov. 18, 1969	X-265-A (interim) item 45 5 percent - max. 24 cents NT or GT June 9, 1970	X-265-B (final) 6 percent Nov. 20, 1970 Apr. 12, 1971	X-267-A (interim) 6 percent Nov. 20, 1970	X-267-B (final) item 110 12 percent Apr. 12, 1971	X-281 2 1/2 percent (surcharge) Feb. 5, 1972	Rate in effect July 1, 1972	X-281-B items 120 and 620 4 percent Oct. 23, 1972	X-295-A items 120 and 620 3 percent Aug. 19, 1973 Dec. 27, 1973
								(1)		(Note 1)	
New Orleans, La.-------- Mobile, Ala.-----------	A B C	347 260 * 223	368 276 236	386 290 248	390 293 250	413 311 265	437 328 280	448 336 287	448 336 287	454 341 291	468 351 300
Jacksonville, Fla.) Brunswick, Ga.) Savannah, Ga.) Charleston, S. C.)	A	358	379	398	402	426	450	461	461	468	482
To § ¢ Birmingham, Ala. from											
New Orleans, La.-------- Mobile, Ala.-----------	A B C	347 260 * 223	368 276 236	386 290 248	390 293 250	413 311 265	437 328 280	448 336 287	448 336 287	454 341 291	468 351 300
Jacksonville, Fla.) Brunswick, Ga.) Savannah, Ga.) Charleston, S. C.)	A	358	379	398	402	426	450	461	461	468	482

		Percent Increase 1966 to 1973	1969 to 1973
From Mobile Ala. to:			
Birmingham, Ala.) Alabama City, Ala.)	single car	47	27
Attalla, Ala.) Gadsden, Ala.)	volume rates	41	27

TABLE 90--*Continued*

Explanation of description:

A - Ore, iron, crude, containing not more than 73 percent natural iron content, not ground, min. wt. 100,000 lbs., except when car is loaded to full visible capacity or to load limit, actual weight will govern.
B - Ore, iron, containing not more than 73 percent natural iron content, in bulk in open top cars, min. wt. 100,000 lbs., except when car is loaded to full visible capacity or to load limit, actual weight will govern.
C - Ore, iron, containing not more than 73 percent natural iron content, in bulk, in open top cars, min. wt. 100,000 lbs., per car, except when car is loaded to full visible capacity or to load limit, actual weight will govern, and subject to an aggregate min. wt. of 1,800 tons of 2,000 lbs. per shipment.
(Note - Portion underscored above was added effective October 4, 1968)

Explanation of reference marks:

(1) - Increase of 2 1/2 percent applied to freight charges, however, rate here increased for comparative purposes.
@ - Items 19135 and 19210.
# - Items 19145 and 19220.
* - No increase applied.
x - Supplement 145.
¢ - Also includes points in Birmingham, Ala. group as described in Item 590:

(Item 590-C - SFTB 78-M, ICC S-398)
(Applicable only when specific reference is made to this item)

Except as otherwise specifically provided in tariff, as amended, rates published in tariff, as amended, to Birmingham, Ala., are also applicable to the following points ******:

A L A B A M A

Avondale
Bessemer
Birmet
Boyles
East Birmingham
Ensley
Exum
Fairfield
Gate City
Grasselli
Greene
Irondale
Ketona
McAdory
Mim's
Mineral Springs
Mt. Pinson
No. Birmingham
Oakmoor
Pawnee
Phoenixville
Pratt City
Ruffner No. 2
Tarrant
Thomas
West End
Woodlawn
Woodward
Wylam

Note 1 - X-281-A never became effective
Tariff Authority: SFTB 78-M, ICC S-398 (General Import Tariff)

TABLE 91

History of ex parte increases on iron ore from, to, and within SFA territory

Tariff Number	Effective date	Sought	Authorized	Applied	Authority
X-256 (Interim)	Aug. 19, 1967	10¢ NT or GT	10¢ NT or GT	10¢ NT or GT	329 ICC 854, 885
X-256 (Final)	Mar. 18, 1968	do	do	do	332 ICC 280, 344
X-259	May 27, 1968	5% - Max. 20¢ NT or GT	Tariff never became effective; canceled by X-259-A		
X-259-A	June 24, 1968	do	3% - Max. 20¢ NT or GT	3% - Max. 20¢ NT or GT	332 ICC 590, 595
X-259-B (Interim)	Nov. 28, 1968	do	5% - Max. 20¢ NT or GT	5% - Max. 20¢ NT or GT	332 ICC 590, 608
X-259-B (Final)	Jan. 30, 1969	do	do	do	332 ICC 714, 734, 741
X-262	Nov. 18, 1969	6%	6%	6%	337 ICC 436, 473
X-265	June 2, 1970	6%	Tariff never became effective; canceled by X-265-A		
X-265-A (Interim)	June 9, 1970	6%	5% - Max. 24¢ NT or GT	5% - Max. 24¢ NT or GT	Order of May 27, 1970
X-265-B (Interim)	Nov. 20, 1970	6%	6%	6%	Order of Nov. 4, 1970
X-265-B (Final)	Apr. 12, 1971	6%	6%	6%	339 ICC 125, 257
X-267	Nov. 18, 1970	6%	Tariff never became effective; canceled by X-267-A		
X-267-A (Interim)	Nov. 20, 1970	W - 10%; T, F, X - 15%	6%	6%	Order of Nov. 4, 1970
X-267-B (Final)	Apr. 12, 1971	do	W - 6%; T, F, X - 12%	W - 6%; T, F, X - 12%	339 ICC 125, 257
X-281	Feb. 5, 1972	2 1/2% (Surcharge)	2 1/2% (Surcharge)	2 1/2% (Surcharge)	340 ICC 358
X-281-A	May 1, 1972	5%	Tariff never became effective; canceled by X-281-B		
X-281-B	Oct. 23, 1972	5%	W - 4%(b); F, T - 5%(b)	W - 4%(b); F, T - 5%(b)	341 ICC 288, 388, 528
X-292 (Interim)		2%	Increase denied		Order of Feb. 13, 1973
X-295	(a)July 29,1973	5%	Tariff never became effective; canceled by X-295-A		
X-295-A (Interim)	Aug. 19, 1973	5%	3%	3%	Order of Aug. 2, 1973
X-295-A (Final)	Dec. 27, 1973	5%	3%	3%	344 ICC 589, 657

Explanation of reference marks and abbreviations:

SFA - Southern Freight Association
NT - Per ton of 2,000 pounds
GT - Per ton of 2,240 pounds
¢ - Cents
F - From SFA
T - To SFA

W - Within SFA
X - Import and Export Freight
(a) - Effective date postponed to Aug. 13, 1973 due to Presidential Price Freeze.
(b) - Applies also on import and export freight.

Part I(D)(3): Revenue yields and cost of service of representative or repetitive movements

The order of December 28, 1973, requested that the parties provide data concerning representative and/or repetitive rates on iron ores, as of September 1, 1973. This data was to include: origin, destination, rate, minimum weight, actual loading, carload revenue, actual and short-line distances, and ton-mile earnings based on actual distances. The data provided have been adjusted to reflect statistics on a net ton basis. In addition, in order to supplement the record, the Coordinator directed the Section of Cost and Valuation of the Commission to supply the Coordinator with adjusted regional average costs for the typical or representative movements of record.

While no adjustments in rates will be ordered as a result of the calculations made for this section, the data developed have been most significant in the analysis and findings made elsewhere in the report. This compilation of data has provided the Commission the opportunity to study, in depth, the major movements of iron ores nationwide. No questions have been raised in any of the pleadings as to the actual representative nature of these movements. We have concluded that these movements are, in fact, representative, and that the financial picture developed accurately reflects the situation existing on September 1, 1973.

The accuracy of this picture is limited by the data provided by the parties. Actual annual use of the involved rates was not provided for each movement. Thus, weighted averages for all movements or particular types of movements could not be developed and simple averages were substituted of necessity. Minor differences in rates or other input data were also noted and statistics were developed for each set of data provided in these cases due to the impossibility of eliminating these differences. Further, "averages" were presented by some of the parties in lieu of more precise data.

In order to insure the greatest possible accuracy in our evaluation of the data, we have in all cases divided the movements by territory, type of movement (single-car, multiple-car, and unit-train rates), and actual car weights. This breakdown allows comparison of similar types of movements within territories. Elsewhere in this report, we have noted discrepancies between the type of rate and the actual usage of the rate. That is, in many instances single-car rates are actually moving trainload quantities. We were unable to adjust for these discrepancies in preparing the data for this section because of the fact that a single-car rate may be moving single cars in individual cases. The difficulty in analyzing rates in these cases is one reason for our recommendation that the carriers examine their tariffs to determine whether single-car rates should be refiled as multiple-car or trainload rates.

Tables 92 through 120 provide the computation of variable costs for representative rates on iron ore movements as furnished by the respondents in this proceeding. In addition to the variable costs computations, we also developed the fully allocated costs for these movements with constant costs distributed on three bases, i.e., ton and ton-mile, car and car-mile, and dollar basis, to conform with the cost estimates provided in Ex Parte No. 270 (Sub-No. 6) on scarp iron and steel and in Ex Parte No. 270 (Sub-No. 4) on coal. As noted, the cost estimates provided are for the representative movements of record with the exception of the so-called "paper rates." Also, no cost estimates are provided in those instances where sufficient information was not available to prepare the necessary data.

In developing these cost estimates, we utilized regional average costs adjusted to reflect operating practices as described below. These adjusted regional average costs, which were stated in dollars per net ton, are at the 1973 level of costs and are compared with the rate per net ton as of September 1, 1973, or Ex Parte No. 281-B level. Separate tables are shown for single-car, multiple-car, and trainload movements, separated by rate territories, distances and various weight groupings.

TABLE 92

Earnings, rates and costs for single-car movements originating in official territory

Actual weight group: 100,001 to 130,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
			Pounds	Pounds	Cents	Cents							Percent	Percent	Percent	Percent
246	Cleveland, Ohio	Parkersburg, W. Va.	113,588	SGT	110.06	1.94	(1)(a)	$4.77	$5.06	$6.45	$6.02	$6.42	94	74	79	74
TABLE 93																
Actual weight group: 130,001 to 160,000 pounds																
99	Philadelphia, Pa.	Bethlehem, Pa.	140,672	SGT	187.77	2.87	(8)	2.84	2.83	3.85	3.10	3.34	100	74	85	79
212.3	Port Covington (Balt.), Md.	do	153,440	SGT	186.92	1.77	(8)	3.75	3.73	5.01	4.38	4.73	101	75	86	79
423	Fairless, Pa.	South Duquesne, Pa.	151,200	SGT	87.13	1.15	(9)	4.88	5.13	7.08	6.21	6.51	95	69	79	75
441	do	Youngstown, Ohio	150,876	SGT	89.36	1.18	(9)	5.22	4.68	6.68	5.79	5.93	112	78	90	88
477	Benson Mines, N.Y.	Cleveland, Ohio	151,672	SGT	94.81	1.25	(2)	5.96	4.89	7.01	6.07	6.20	122	85	98	96
518	do	Aliquippa, Pa.	134,848	SGT	75.08	1.11	(8)	5.77	6.26	8.51	7.60	7.93	92	68	75	73
645	Ashtabula Harbor, Ohio	Henry, Va.	135,988	SGT	67.10	.99	(1)(a)	6.37	7.08	9.74	8.77	8.98	90	65	73	71
689.8	Curtis Bay (Balt.), Md.	Bristol, Va.-Tenn.	158,368	SGT	74.63	.94	(9)	6.48	5.38	7.71	6.69	6.97	120	84	97	93
TABLE 94																
Actual weight group: 160,001 to 180,000 pounds																
16.7	Philadelphia, Pa.	Swedeland, Pa.	168,000	90% of marked capacity.	1068.86	12.72	(3)(a)	2.13	1.68	2.34	1.92	2.13	127	91	111	100
55.0	do	Bethlehem, Pa.	166,000	do	398.85	4.81	(8)	2.64	2.02	2.80	2.33	2.56	131	94	113	103
55.2	do	do	168,000	do	402.17	4.79	(9)	2.64	2.00	2.78	2.31	2.54	132	95	114	104
61.5	do	Joana, Pa.	168,000	----	336.58	4.03	(8)	2.48	2.04	2.84	2.36	2.58	121	87	105	95
260	Baltimore, Md.	Johnstown, Pa.	166,432	SGT	145.74	1.75	(9)	4.55	3.26	4.70	3.95	4.14	140	97	115	110
404	do	Youngstown, Ohio	166,432	----	107.87	1.29	(8)	5.21	4.13	6.02	5.08	5.24	126	87	103	99
500	Ashtabula Harbor, Ohio	Easton (13th St.), Pa.	168,896	----	96.06	1.14	(1)(a)	5.68	5.19	7.39	7.90	6.50	110	77	72	88
650	Philadelphia, Pa.	Middletown, Ohio	169,344	----	75.48	.89	(8)	5.79	6.08	8.74	7.44	7.70	95	66	78	75
682	Baltimore, Md.	Bristol, Va.-Tenn.	164,000	90% of marked capacity.	77.40	.94	(8)	6.48	5.26	7.57	6.51	6.79	123	85	99	95
TABLE 95																
Actual weight group: 180,001 to 220,000 pounds																
60	Joanna, Pa.	Bethlehem Pa.	200,000	90% of marked capacity.	403.3	4.03	(2)	2.42	1.75	2.54	2.01	2.22	138	95	120	109
TABLE 96																
Earnings, rates and costs for multiple-car movements originating in official territory																
Actual weight group: 130,001 to 160,000 pounds																
57	Corrigan-McKinley Dock, Cleveland, Ohio.	Warren, Ohio	159,018	----	388.6	4.87	----	2.78	1.34	2.10	1.65	1.69	207	132	168	164
57	do	do	159,018	----	398.7	5.00	----	2.85	1.34	2.10	1.65	1.69	213	136	173	169
138	N&W Dock, Huron, Ohio	Youngstown, Ohio	159,284	----	143.20	1.80	(1)(a)	2.49	2.42	3.47	2.90	3.07	103	72	86	81
138	do	do	159,284	----	146.60	1.84	(1)(b)	2.53	2.42	3.47	2.90	3.07	105	73	88	83
TABLE 97																
Actual weight group: 160,001 to 180,000 pounds																
51	Erie Dock, Cleveland, Ohio	Warren, Ohio	167,731	----	408.10	4.87	(1)(a)	2.48	1.28	2.05	1.58	1.62	194	121	157	153
51	do	do	167,731	----	418.40	4.98	----	2.55	1.28	2.05	1.58	1.62	199	124	161	157
61	Ashtabula, Ohio	Youngstown, Ohio	166,096	----	337.90	4.07	(1)(a)	2.48	1.35	2.15	1.67	1.71	184	115	149	145
61	do	do	166,096	----	346.40	4.17	----	2.55	1.35	2.15	1.67	1.71	189	119	153	149
63	Lower Lake Ports	do	167,194	----	329.30	3.94	----	2.48	1.35	2.16	1.68	1.72	184	115	148	144
63	do	do	167,194	----	337.60	4.04	----	2.55	1.35	2.16	1.68	1.72	189	118	152	148
65	Corrigan-McKinley Dock, Cleveland, Ohio.	do	165,469	----	315.90	3.82	(1)(a)	2.48	1.38	2.18	1.71	1.75	180	113	145	142
65	do	do	165,469	----	323.80	3.91	----	2.55	1.38	2.19	1.71	1.75	185	116	149	146
65	Erie Dock, Cleveland, Ohio	do	168,605	----	321.90	3.82	(1)(a)	2.48	1.36	2.17	1.68	1.72	182	114	148	144
65	do	do	168,605	----	330.00	3.91	----	2.55	1.36	2.17	1.68	1.72	188	118	152	148
86	C & P Dock Cleveland, Ohio	do	172,211	----	248.50	2.88	(1)(a)	2.48	1.46	2.34	1.82	1.85	170	106	136	134
86	do	do	172,211	----	254.70	2.98	----	2.55	1.46	2.34	1.82	1.85	175	109	140	138
86	do	Warren, Ohio	167,910	----	242.30	2.86	(1)(a)	2.48	1.49	2.37	1.85	1.89	166	105	134	131
86	do	do	167,910	----	248.40	2.96	----	2.55	1.49	2.37	1.85	1.89	171	108	138	135
107.7	B & O Dock Lorain, Ohio	do	164,595	----	189.60	2.30	(1)(a)	2.48	1.65	2.59	2.08	2.09	150	96	120	119

See notes at end of tables.

TABLE 97--Continued

Earnings, rates and costs for multiple-car movements originating in official territory--Continued

Actual weight group: 160,001 to 180,000 pounds--Continued

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
			Pounds	*Pounds*	*Cents*	*Cents*							*Percent*	*Percent*	*Percent*	*Percent*
107.7	B & O Dock Lorain, Ohio	Warren, Ohio	164,595	----------	194.40	2.36	----------	$2.55	$1.65	$2.59	$2.06	$2.09	155	98	124	122
120.7	Lorain, Ohio	Youngstown, Ohio	163,565	----------	168.10	2.08	(1)(c)	2.48	1.73	2.73	2.17	2.20	149	91	114	113
120.7	do	do	163,565	----------	172.40	2.11	----------	2.50	1.73	2.72	2.17	2.20	147	95	118	116
124	Huron, Ohio	Warren, Ohio	166,848	----------	167.00	2.00	(1)(c)	2.48	2.25	3.25	2.68	2.65	110	76	93	87
124	do	do	166,656	----------	171.20	2.05	----------	2.50	2.25	3.25	2.66	2.65	113	78	95	89
145	Lower Lake Ports	Pittsburgh & Wheeling Group	167,194	----------	191.40	2.29	(a)	3.32	1.85	2.82	2.32	2.30	179	116	143	141
145	do	do	167,194	----------	195.80	2.34	(a)	3.38	1.85	2.82	2.33	2.35	183	116	146	144
170	do	Donora & Monessen Group	167,194	----------	171.80	2.05	----------	3.50	2.00	3.15	2.52	2.54	175	111	129	137
170	do	do	167,194	----------	174.70	2.09	----------	3.55	2.00	3.15	2.52	2.54	178	113	141	140
186	do	Johnstown Group	167,194	----------	161.30	1.90	----------	3.60	2.10	3.30	2.60	2.60	175	112	139	138
186	do	do	167,194	----------	168.90	2.02	----------	3.78	2.17	3.30	2.65	2.66	170	114	142	141
405.0	Baltimore, Md.	Buffalo, N.Y.	176,086	----------	113.36	1.29	(3)	5.21	3.32	5.21	4.21	4.21	157	100	124	124
464	do	Cleveland, Ohio	175,683	----------	104.83	1.19	(3)	5.53	3.67	5.75	4.67	4.66	151	96	118	119
488.7	do	do	170,106	----------	98.19	1.13	(3)	5.53	3.89	6.05	4.97	4.94	142	91	111	112
489.5	do	do	164,394	----------	92.80	1.13	(3)	5.53	4.53	6.00	5.64	5.74	122	93	98	96

TABLE 98

Actual weight group: 180,001 to 220,000 pounds

45	A&D Dock Ashtabula, Ohio	Warren, Ohio	192,349	----------	530.40	5.51	(1)(a)	2.48	1.11	1.86	1.37	1.41	223	133	181	176
45	do	do	192,349	----------	563.80	5.67	----------	2.55	1.11	1.88	1.37	1.41	230	137	186	181
80.1	P&C Dock Conneaut, Ohio	Youngstown, Ohio	199,181	----------	308.60	3.10	(1)(a)	2.48	1.71	2.57	2.01	2.17	145	96	123	114
80.1	do	do	199,181	----------	316.30	3.17	----------	2.54	1.71	2.57	2.01	2.17	148	98	127	118
90.1	Conneaut, Ohio	Warren, Ohio	196,134	----------	270.10	2.75	(1)(a)	2.48	1.79	2.68	2.11	2.27	139	93	118	109
90.1	do	do	196,134	----------	276.90	2.82	----------	2.54	1.79	2.68	2.11	2.27	142	95	121	112

TABLE 99

Earnings, rates and costs for unit-train movements originating in official territory

Actual weight group: 140,001 to 160,000 pounds

51	Cleveland, Ohio	Warren, Ohio	159,040	5,000 GT	[illegible]	4.67	(1)(a)	2.40	.93	1.70	1.26	1.18	207	146	198	210
65	do	Youngstown, Ohio	159,040	5,000 GT	311.31	3.92	(1)(c)	2.55	1.01	1.62	1.88	1.27	252	160	183	201
108	Ashtabula Harbor, Ohio	Aliquippa, Pa.	146,720	5,000 GT	195.29	2.66	(1)(a) and (4).	2.88	1.09	2.01	1.92	1.86	198	120	150	156
126	Cleveland, Ohio	Neville Island, Pa.	159,040	5,000 GT	179.75	2.26	(1)(b)	2.86	1.47	2.47	1.93	1.86	196	117	149	155
135.7	Lorain, Ohio	Farrell, Pa.	158,368	5,000 GT	144.84	1.83	(1)(a)	2.48	1.52	2.96	2.00	1.90	163	97	124	128
138	Huron, Ohio	Youngstown, Ohio	152,992	5,000 GT	141.30	1.85	(1)(c)	2.56	1.58	2.62	2.00	2.00	161	97	123	128
220	do	Portsmouth, Ohio	157,024	10,000 GT	130.32	1.66	(1)(c)	3.65	1.80	3.15	2.50	2.35	197	116	146	155
220	do	do	157,024	10,000 GT	130.84	1.66	(1)(a)	3.66	1.85	3.15	2.50	2.39	198	116	146	155
226	Toledo, Ohio	do	148,064	10,000 GT	119.62	1.62	(1)(c)	3.65	2.25	3.57	2.96	2.86	162	103	124	128
226	do	do	148,064	10,000 GT	119.82	1.62	(1)(a)	3.66	2.25	3.57	2.95	2.86	163	103	124	128
226	do	do	153,216	10,000 GT	123.70	1.62	(1)(c)	3.65	2.46	3.70	3.13	3.12	148	98	117	117
226	do	do	153,216	10,000 GT	124.09	1.62	(1)(a)	3.66	2.46	3.70	3.13	3.12	148	97	117	117
230	do	do	145,152	10,000 GT	115.23	1.59	(1)(c)	3.66	2.30	3.64	3.02	2.92	159	100	121	125
230	do	do	145,152	10,000 GT	115.51	1.59	(1)(a)	3.66	2.30	3.64	3.02	2.92	159	101	121	125
334	Cleveland, Ohio	do	159,040	5,000 GT	85.46	1.07	(1)(a)	3.58	2.90	4.25	3.43	3.27	130	84	105	110
361.1	Lorain, Ohio	do	158,368	5,000 GT	78.51	.99	(1)(a)	3.59	2.90	4.35	3.50	3.29	128	83	103	109

TABLE 100

Actual weight group: 160,001 to 180,000 pounds

45	Ashtabula, Ohio	Warren, Ohio	163,400	----------	533.70	6.50	----------	2.94	.88	1.63	1.10	1.11	334	180	269	265
51	Erie Dock Cleveland, Ohio	do	163,400	----------	470.08	5.76	----------	2.94	.91	1.68	1.22	1.15	323	175	241	256
55	Republic Docks Cleveland, Ohio.	do	163,400	----------	436.73	5.35	----------	2.94	.93	1.71	1.25	1.18	316	172	235	249
60	Ashtabula, Ohio	Youngstown, Ohio	163,400	----------	400.33	4.90	----------	2.94	.96	1.75	1.28	1.21	306	168	230	243
61	do	do	168,000	5,000 GT 1,500 GT	338.11	4.03	----------	2.48	.94	1.74	1.28	1.19	264	143	187	208
63	do	do	161,917	5,000 GT	315.03	3.89	----------	2.45	.96	1.79	1.31	1.24	253	139	189	220
65	Erie Dock, Cleveland, Ohio	do	163,400	----------	369.54	4.52	----------	2.94	.98	1.80	1.32	1.25	300	163	223	235
69	Republic Docks, Cleveland, Ohio.	do	163,400	----------	348.16	4.26	----------	2.94	1.00	1.83	1.35	1.27	294	161	218	231

TABLE 100—Continued

Earnings, rates and costs for unit-train movements originating in official territory—Continued

Actual weight group: 160,001 to 190,000 pounds—Continued

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton			Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs		
										Ton and ton-mile (10)	Car and car-mile (11)	Dollar basis (12)		Ton and ton-mile (14)	Car and car-mile (15)	Dollar basis (16)
			Pounds	Pounds	Cents	Cents							Percent	Percent	Percent	Percent
118.9	Cleveland, Ohio	Weirton, W. Va	170,800	5,000 GT	205.58	2.41	(4)	$2.86	$1.23	$2.21	$1.64	$1.56	233	129	174	183
124	Huron, Ohio	Warren, Ohio	163,400		193.71	2.37		2.94	1.29	2.29	1.74	1.64	228	128	169	179
131	Cleveland, Ohio	Weirton, W. Va	167,104	5,000 GT	183.37	2.19	(1)(b)(4)	2.88	1.31	2.33	1.76	1.66	220	124	164	173
138	Huron, Ohio	Youngstown, Ohio	163,400		174.08	2.13		2.94	1.37	2.41	1.84	1.74	215	122	160	169
151	Conneaut, Ohio	Stations located on Union Railroad	184,800	5,000 GT	202.84	2.20	(1)(a)	3.32	1.72	2.41	1.76	1.68	192	138	189	198
174.7	do	Monessen, Pa	155,312	5,000 GT	165.17	2.00	(1)(a)	3.49	1.68	2.84	2.21	2.13	208	123	158	164
177	Lakefront Dock, Toledo, Ohio	Hamilton, Ohio	163,400		135.71	1.66		2.94	1.57	2.74	2.11	2.00	187	107	139	147
183	do	Middletown, Ohio	163,400		131.26	1.61		2.94	1.61	2.79	2.16	2.04	183	105	136	144
185	do	do	163,400		129.84	1.59		2.94	1.62	2.81	2.17	2.05	181	105	135	143
204	Ashtabula, Ohio	Johnstown, Pa	168,000	5,000 GT 1,500 GT	151.47	1.80		3.68	1.69	2.94	2.28	2.14	218	125	163	172
222	Huron, Ohio	Portsmouth, Ohio	162,848	5,000 GT	131.53	1.62	(1)(a)	3.59	1.82	3.17	2.44	2.30	197	115	147	156
226	Toledo, Ohio	do	163,072	5,000 GT	131.75	1.62	(1)(c)	3.65	2.10	3.42	2.73	2.66	174	107	134	137
226	do	do	163,072	5,000 GT	132.07	1.62	(1)(a)	3.66	2.10	3.42	2.73	2.66	174	107	134	138
227	Cleveland, Ohio	Johnstown, Pa	168,000	5,000 GT	139.10	1.66	(1)(c)	3.76	1.81	3.13	2.42	2.29	208	120	155	164
232	C&O Dock, Toledo, Ohio	Middletown, Ohio	163,400		103.53	1.27		2.94	1.86	3.21	2.51	2.36	158	92	117	125
237	Cleveland, Ohio	Portsmouth, Ohio	162,400	10,000 GT	125.13	1.54	(1)(c)	3.65	2.17	3.53	2.82	2.75	168	103	129	133
237	do	do	162,400	15,000 GT	125.42	1.55	(1)(a)	3.66	2.17	3.53	2.82	2.75	169	104	130	133
250	C&O Dock, Toledo, Ohio	Hamilton, Ohio	163,400		96.08	1.18		2.94	1.96	3.36	2.63	2.48	150	98	112	119
253	do	Ashland, Ky	163,400		94.94	1.16		2.94	1.98	3.39	2.68	2.50	148	87	111	118
259	Toledo, Ohio	do	161,280	5,000 GT	113.42	1.41	(1)(c)	3.64	2.16	3.59	2.98	2.74	169	101	127	133
259	Lakefront Dock, Toledo, Ohio	do	163,400		92.74	1.14		2.94	2.01	3.44	2.70	2.54	146	85	109	116
349	do	do	163,400		68.83	.84		2.94	2.48	4.20	3.34	3.15	119	70	88	93
368	Erie Dock, Cleveland, Ohio	do	163,400		65.27	.80		2.94	2.58	4.36	3.47	3.27	114	67	85	90

TABLE 101

Actual weight group: 190,001 to 220,000 pounds

(1)	(2)	(3)	(4)	(5)	(6)	(7)	Note	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
82.1	Conneaut, Ohio	Youngstown, Ohio	191,296	5,000 GT	286.76	3.02	(1)(a)	2.48	1.06	1.93	1.31	1.35	234	128	189	184
165	Huron, Ohio	Mingo Jct., Ohio	198,808	5,000 GT	173.94	1.74	(1)(a) and (4)	2.88	1.32	2.45	1.75	1.67	218	118	165	172
183	Toledo, Ohio	Middletown, Ohio	191,120	5,000 GT	144.37	1.51	(1)(c)	2.76	1.45	2.63	1.92	1.83	190	105	144	151

TABLE 102

Earnings, rates and costs for single-car movements originating in southern territory

Actual weight group: 130,001 to 160,000 pounds

(1)	(2)	(3)	(4)	(5)	(6)	(7)	Note	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
302	Georgetown, Ga	Thomas, Ala	136,000	100,000	61.90	.91	NCU	2.75	2.97	4.16	3.72	3.87	93	66	74	71
353	do	Alabama City, Ala	134,000	100,000	59.59	.89	NCU	3.14	3.28	4.61	4.15	4.28	96	68	76	73

TABLE 103

Actual weight group: 160,001 to 190,000 pounds

(1)	(2)	(3)	(4)	(5)	(6)	(7)	Note	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
268	Glenwood, Ala	Thomas, Ala	164,000	100,000	84.10	1.03	NCU	2.75	2.76	3.86	3.33	3.60	105	71	83	76
319	do	Alabama City, Ala	170,000	100,000	87.13	1.03	NCU	3.27	2.93	4.17	3.56	3.83	112	78	92	85

TABLE 104

Actual weight group: 190,001 to 220,000 pounds

(1)	(2)	(3)	(4)	(5)	(6)	(7)	Note	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
112	Rockwood, Ala	N. Birmingham, Ala	204,000	90% of marked capacity.	156.60	1.54		1.72	1.41	2.10	1.67	1.84	122	82	103	93
172	do	Alabama City, Ala	214,000	90% of marked capacity.	129.40	1.21		2.08	1.62	2.47	1.94	2.11	128	84	107	99

TABLE 105

Actual weight group: 220,001 to 250,000 pounds

(1)	(2)	(3)	(4)	(5)	(6)	(7)	Note	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
116	Rockwood, Ala	Thomas, Ala	230,000	90% of marked capacity.	170.50	1.48	NCU	1.72	1.30	1.81	1.54	1.70	132	95	112	101

See notes at end of table.

TABLE 106

Earnings, rates and costs for multiple-car movements originating in southern territory

Actual weight group: 100,001 to 130,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
			Pounds	Pounds	Cents	Cents							Percent	Percent	Percent	Percent
83	Burnside, La	Harvey, La	129,000	140,000	157.79	2.446	—	$2.03	$2.06	$2.90	$2.48	$2.66	98	70	82	76
263	Lumpkin, Ga	Alabama City, Ala	125,000	100,000	70.864	1.132	—	3.14	2.81	3.90	3.55	3.66	112	81	88	86
276	Richland, Ga	Gadsden, Ala	121,180	100,000	65.594	1.083	NCU	3.14	2.94	4.06	3.73	3.83	107	77	84	82

TABLE 107

Actual weight group: 130,001 to 160,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
216	Copperhill, Tenn	Alabama City, Ala	143,840	360 N.T.	115.54	1.43	—	3.47	2.28	3.24	2.83	2.97	152	107	123	117
235	do	do	168,731	120,000	109.71	1.48	—	3.47	1.95	2.96	2.52	2.54	178	117	138	137
285	Lumpkin, Ga	do	133,800	100,000	79.254	1.184	—	3.00	2.67	3.77	3.37	3.48	112	80	89	86
286	Mobile, Ala	N. Birmingham, Ala	146,000	1800 N.T.	82.30	1.13	—	3.00	2.14	3.24	2.78	2.80	140	93	108	107
300	Copperhill, Tenn	Alabama City, Ala	147,640	360 N.T.	85.39	1.03	—	3.47	2.67	3.86	3.36	3.48	130	90	103	100
348	Mobile, Ala	Birmingham, Ala	141,500	100,000	61.14	.863	NCU	3.00	2.63	3.94	3.44	3.43	114	76	87	87
386	Copperhill, Tenn	N. Birmingham, Ala	142,000	120,000	63.80	.90	NCU	3.47	3.57	4.98	4.46	4.56	97	70	78	76
389	do	Thomas, Ala	138,000	120,000	61.60	.89	NCU	3.47	3.66	5.09	4.57	4.77	95	68	76	73
398	do	Woodward, Ala	138,000	120,000	60.20	.87	NCU	3.47	3.71	5.16	4.63	4.84	94	67	75	72

TABLE 108

Actual weight group: 160,001 to 190,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
256	Mobile, Ala	Woodward, Ala	182,000	100,000	106.60	1.17	NCU	3.00	1.82	2.89	2.31	2.37	165	104	130	127
268	do	Thomas, Ala	180,000	100,000	100.70	1.12	NCU	3.00	1.88	2.99	2.40	2.46	160	100	125	122
279	do	N. Birmingham, Ala	182,000	100,000	97.85	1.075	—	3.00	1.92	3.06	2.45	2.51	156	98	122	120
322	Copperhill, Tenn	Alabama City, Ala	162,000	120,000	87.30	1.08	NCU	3.47	2.93	4.18	3.60	3.83	118	83	96	91
324.9	Mobile, Ala	do	178,000	1800 N.T.	82.18	.92	—	3.00	2.17	3.42	2.78	2.83	138	88	108	106
329	do	do	178,000	100,000	82.20	.92	—	3.00	2.17	3.42	2.78	2.83	138	88	108	106
341	do	do	181,609	100,000	79.97	.88	—	3.00	2.21	3.51	2.83	2.89	136	85	106	104
341	do	do	167,280	1800 N.T.	73.58	.79	—	3.00	2.33	3.63	3.00	3.04	129	83	100	99
348	Burnside, La	Lone Star, Tex	178,600	100,000	125.42	1.405	NCU	4.90	3.24	4.72	3.91	4.19	151	104	125	117
423	do	Fairfield, Ala	181,400	100,000	100.36	1.109	NCU	4.69	3.18	4.70	3.93	4.16	147	100	119	113
452	do	do	181,400	100,000	94.11	1.038	NCU	4.69	3.32	4.91	4.10	4.36	141	96	114	108
484	do	do	181,400	100,000	87.89	.969	NCU	4.69	3.47	5.15	4.30	4.53	135	91	109	104
499	do	do	181,400	100,000	85.25	.940	NCU	4.69	3.54	5.26	4.39	4.62	132	89	107	102
1,277	do	Minnequa, Colo	166,300	Marked capacity of car.	53.020	.637	NCU	8.14	9.09	13.35	11.36	11.93	90	61	72	68

TABLE 109

Actual weight group: 190,001 to 220,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
267	Mobile, Ala	Fairfield, Ala	198,000	100,000	111.20	1.12	NCU	3.00	2.05	3.15	2.52	2.67	146	95	119	112
336	do	do	198,000	1800 N.T.	83.43	.863	NCU	3.00	2.45	3.78	3.03	3.19	122	79	99	94
384.2	do	Birmingham, Ala	190,020	1800 N.T.	74.19	.78	—	3.00	2.77	4.45	3.48	3.58	108	67	86	84

TABLE 110

Earnings, rates and costs for single-car movements originating in western territory

Actual weight group: 70,001 to 100,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
237	Desert Mound, Utah[1]	Geneva, Utah	100,000	100,000	85.44	1.71	—	4.02	4.51	6.00	5.56	5.90	89	67	72	68
825	Comstock, Utah	Pueblo, Colo	100,000	100,000	50.78	1.02	—	8.31	9.86	13.03	12.38	12.91	84	64	67	64
1,085	do	do	100,000	100,000	41.88	.83	—	4.27	11.23	14.92	14.20	14.71	38	29	30	29

[1] Includes Iron Mountain, Utah and Iron Springs, Utah. Computations made for Iron Mountain, Utah (longest haul).

TABLE 111

Actual weight group: 100,001 to 130,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
78	Gilbert, Minn	Duluth, Minn	127,200	--------	163.08	2.56	—	2.00	2.66	3.70	3.17	3.48	75	54	63	57
81.16	Coleraine (Plummer), Minn	Duluth Ore Docks, Minn	129,248	70,000	140.46	2.17	—	1.77	2.40	3.21	2.82	3.09	74	55	63	57
90	Iron River, Mich	Escanaba, Mich	120,960	30T less than marked capacity.	110.40	1.79	—	1.64	2.60	3.43	3.07	3.35	63	48	53	49
101	Pierce Mine, Minn	SW Allouez Docks, Wis	129,898	LPFC	113.68	1.75	—	1.77	2.77	3.87	3.32	3.62	64	46	53	49
101	do	do	129,898	LPFC	109.46	1.69	—	1.71	2.77	3.87	3.32	3.62	62	44	52	47
276	Cima, Calif	L. A. Harbor, Calif	110,000	110,000	84.86	1.54	—	4.27	4.44	6.03	5.49	5.82	96	71	78	

TABLE 112

Earnings, rates and costs for single-car movements originating in western territory

Actual weight group: 130,001 to 180,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton			Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs		
										Ton and ton-mile (10)	Car and car-mile (11)	Dollar basis (12)		Ton and ton-mile (14)	Car and car-mile (15)	Dollar basis (16)
			Pounds	*Pounds*	*Cents*	*Cents*							*Percent*	*Percent*	*Percent*	*Percent*
10	Eagle Mills, Mich	Marquette, Mich	134,400	----------	557.80	8.33	----------	$.83	$1.69	$2.30	$1.98	$2.18	49	36	42	38
10	do	do	150,000	----------	585.00	7.80	----------	.78	1.52	2.13	1.76	1.97	51	37	44	40
10	do	Presque Isle Dock	142,240	LFVC	590.50	8.30	----------	.83	1.61	2.21	1.86	2.07	52	38	45	40
10	do	do	157,888	LFVC	612.50	7.77	----------	.78	1.45	2.08	1.68	1.88	54	38	46	41
15	Negaunee, Mich	Marquette, Mich	134,200	----------	371.27	5.53	----------	.83	1.74	2.36	2.02	2.25	48	35	41	37
15	Empire Mine, Mich	do	153,800	----------	398.87	5.20	----------	.78	1.53	2.15	1.77	1.97	51	36	44	40
15	do	Presque Isle Dock	136,845	LFVC	406.13	5.18	----------	.78	1.50	2.12	1.74	1.94	52	37	45	40
18	Ishpeming, Mich	Marquette, Mich	134,400	----------	308.88	4.61	----------	.83	1.77	2.40	2.06	2.28	47	35	40	36
33	Humboldt Mine, Mich	do	149,200	----------	176.33	2.36	----------	.78	1.72	2.40	2.00	2.22	45	33	39	35
33	do	Presque Isle Dock	152,760	LFVC	179.79	2.32	----------	.78	1.68	2.36	1.96	2.17	46	33	40	36
40	Republic Mine, Mich	Marquette, Mich	147,000	----------	143.33	1.95	----------	.78	1.80	2.50	2.10	2.33	43	31	37	33
41	do	Presque Isle Dock	152,544	LFVC	144.51	1.88	----------	.78	1.75	2.45	2.04	2.26	45	32	38	35
69	Eveleth, Minn	Duluth, Minn	143,000	----------	207.24	2.89	----------	2.00	2.32	3.34	2.77	3.04	86	60	72	66
70.10	Virginia (Rauchleau), Minn	Duluth Ore Docks, Minn	139,776	70,000	176.66	2.52	----------	1.77	2.15	2.93	2.52	2.77	82	60	70	64
74.74	Buhl (Sherman), Minn	do	138,416	70,000	161.89	2.37	----------	1.77	2.23	3.03	2.62	2.88	79	58	68	61
76	McKinley, Minn	Duluth, Minn	134,400	----------	176.04	2.63	----------	2.00	2.52	3.55	3.00	3.30	79	56	67	61
77.32	Virginia (Rauchleau), Minn	Two Harbors Ore Docks, Minn	139,776	70,000	160.37	2.29	----------	1.77	2.21	3.01	2.59	2.85	80	59	68	62
78	Hibbing, Minn	Duluth, Minn	131,400	----------	176.15	2.56	----------	2.00	2.59	3.62	3.08	3.38	77	55	65	59
79.30	Eveleth (Gross Nelson), Minn	Superior, Wis	149,184	70,000	166.46	2.23	----------	1.77	2.78	3.70	3.18	3.61	64	48	56	49
80.90	McKinley, Minn	Duluth Ore Docks, Minn	140,448	70,000	149.57	2.13	----------	1.77	2.23	3.04	2.62	2.88	79	58	68	61
82	Eveleth, Minn	Superior, Wis	143,000	----------	174.30	2.44	----------	2.00	2.81	3.75	3.24	3.65	71	53	62	55
89	McKinley, Minn	do	134,400	----------	151.01	2.25	----------	2.00	3.02	3.97	3.49	3.92	66	50	57	51
91.35	Buhl (Sherman), Minn	Two Harbors Ore Docks, Minn	138,416	70,000	132.46	1.94	----------	1.77	2.35	3.19	2.77	3.03	75	56	64	58
92	Iron River, Mich	Escanaba, Mich	143,200	----------	146.32	2.04	----------	1.88	2.26	3.10	2.68	2.91	83	61	71	65
92	Hibbing, Minn	Superior, Wis	139,600	----------	151.74	2.17	----------	2.00	2.94	3.90	3.38	3.81	68	51	59	52
101	Mahoning Mine, Minn	SW Allouez Dock, Wis	135,316	LFVC	118.43	1.75	----------	1.77	2.70	3.77	3.20	3.50	66	47	55	51
101	do	do	135,318	LFVC	114.24	1.69	----------	1.71	2.70	3.77	3.20	3.50	63	45	53	49
105	Grand Rapids, Minn	Duluth, Minn	134,400	----------	128.00	1.90	----------	2.00	3.18	4.18	3.67	4.14	63	48	54	48
105	Crosby, Minn	do	134,800	----------	148.90	1.92	----------	2.02	2.81	3.81	3.24	3.66	72	53	62	55
108	Cuyuna (Rabbit Lake Mine), Minn	SW Allouez Dock, Wis	134,691	3 tons less than LFVC	112.32	1.67	----------	1.77	2.71	3.83	3.25	3.50	65	46	54	50
108	do	do	134,691	3 tons less than LFVC	108.35	1.61	----------	1.71	2.71	3.83	3.25	3.56	63	45	53	48
108	Canisteo Mine, Minn	do	138,634	LFVC	115.60	1.67	----------	1.77	2.66	3.77	3.17	3.47	67	47	56	51
106	do	do	138,634	LFVC	111.52	1.61	----------	1.71	2.66	3.77	3.17	3.47	64	45	54	49
106	Hibbing, Minn	Superior, Wis	138,800	----------	130.94	1.88	----------	2.00	2.72	3.84	3.24	3.56	74	52	62	56
106	Grand Rapids, Minn	do	134,400	----------	126.79	1.89	----------	2.00	2.79	3.91	3.33	3.66	72	51	60	55
107	Canisteo, Minn	Duluth, Minn	143,800	----------	134.29	1.87	----------	2.00	3.01	4.01	3.47	3.92	66	50	58	51
107	Ironton, Minn	Superior, Wis	138,200	----------	130.46	1.88	----------	2.02	2.74	3.88	3.26	3.50	74	52	62	58
108	Canisteo, Minn	do	138,400	----------	128.15	1.86	----------	2.00	2.76	3.87	3.27	3.58	73	52	61	56
109	Trommald, Minn	do	131,400	----------	122.87	1.87	----------	2.00	2.86	3.99	3.43	3.75	70	50	58	53
110	Coleraine, Minn	do	139,000	----------	126.38	1.82	----------	2.00	2.76	3.88	3.28	3.60	72	52	61	56
116	Ironton, Minn	do	138,200	----------	121.37	1.78	----------	2.02	3.09	4.12	3.60	4.01	65	49	56	50
117	Calumet, Minn	Duluth, Minn	134,200	----------	114.70	1.71	----------	2.00	3.26	4.29	3.77	4.25	61	47	53	47
118	do	Superior, Wis	133,400	----------	113.68	1.69	----------	2.00	2.90	4.00	3.47	3.80	69	50	58	53
121	Trommald, Minn	do	130,200	----------	108.88	1.67	----------	2.00	3.30	4.34	3.88	4.28	61	46	52	47
131	Delaware Mine, Minn	Duluth, Minn. Docks	136,170	LFVC	91.88	1.35	----------	1.72	3.30	4.37	3.83	4.30	52	39	45	40
131	do	do	136,170	LFVC	88.63	1.30	----------	1.66	3.30	4.37	3.83	4.30	50	38	43	39
276	Woody Creek, Colo	Minnequa, Colo	146,944	100,000	86.98	1.18	----------	3.55	4.22	5.82	5.00	5.52	84	61	71	64

TABLE 113

Actual weight group: 180,001 to 190,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Ton and ton-mile (10)	Car and car-mile (11)	Dollar basis (12)	Ratio of rate to variable costs (13)	Ton and ton-mile (14)	Car and car-mile (15)	Dollar basis (16)
16.0	Negaunee, Mich	Presque Isle Dock	181,036	LFVC	417.93	5.18	----------	.83	1.47	2.10	1.71	1.90	56	40	49	44
65.6	L.A. Harbor, Calif	Kaiser, Calif	186,000	185,000	342.99	3.69	----------	2.36	1.83	2.84	2.17	2.40	129	83	109	98
278.0	Winton Jct., Wyo	Geneva, Utah	190,000	180,000	140.43	1.56	----------	4.36	3.05	4.67	3.70	4.00	143	93	118	109

TABLE 114

Actual weight group: 190,001 to 220,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Ton and ton-mile (10)	Car and car-mile (11)	Dollar basis (12)	Ratio of rate to variable costs (13)	Ton and ton-mile (14)	Car and car-mile (15)	Dollar basis (16)
430.0	Kaiser, Calif	Rillito, Ariz	204,000	100,000	172.89	1.70	----------	9.90	3.67	5.74	4.44	4.81	272	174	223	208
544.6	Pea Ridge, Mo	Birmingham, Ala	200,176	140,000	108.06	1.07	----------	5.80	3.49	5.62	4.37	4.50	166	103	133	129
634	do	Alabama City, Ala	202,000	140,000	94.90	.74	----------	5.80	4.38	6.62	5.35	5.60	132	88	108	103
873.3	Colado, Nev	Portland, Oreg	198,000	100,000	171.04	1.75	----------	11.95	4.97	7.71	6.06	6.51	240	155	197	184
917.3	do	Richland, Wash	198,000	100,000	164.18	1.79	----------	16.40	6.66	10.10	8.07	8.72	247	163	204	188

See notes at end of tables.

TABLE 115

Earnings, rates and costs for multiple-car movements originating in western territory

Actual weight group: 100,001 to 130,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
			Pounds	Pounds	Cents	Cents							Percent	Percent	Percent	Percent
344.6	Barth, Nev	Geneva, Utah	126,000	1500GT	84.16	1.34	----------	$4.90	$4.39	$8.18	$5.44	$6.78	112	60	90	72
624	Iron Mountain, Mich	Granite City, Ill	120,800	1200NT	49.67	.82	----------	5.22	6.23	8.71	7.38	6.11	84	60	71	85
637	Randville, Mich	do	120,900	1200NT	48.66	.80	----------	5.22	6.32	8.86	6.88	6.22	83	59	76	84
TABLE 116																
Actual weight group: 180,001 to 190,000 pounds																
303	Black River Falls, Wis	East Chicago, Ind	189,360	675,000GT	86.00	.88	----------	2.63	2.73	4.17	3.30	3.52	96	63	80	75
TABLE 117																
Earnings, rates and costs for unit-train movements originating in western territory																
Actual weight group: 100,001 to 130,000 pounds																
252	Desert Mound, Utah	Geneva, Utah	100,800	6250GT	63.57	1.26	----------	3.18	2.68	4.22	3.77	3.52	119	75	84	90
	(x) Iron Mountain, Utah															
252	(x) Iron Springs, Utah	do	100,800	6250GT	63.06	1.25	----------	3.15	2.68	4.22	3.77	3.52	118	75	84	89
252		do	100,800	6250GT	62.32	1.24	----------	3.12	2.68	4.22	3.77	3.52	116	74	83	89
252		do	100,800	6250GT	61.79	1.23	----------	3.09	2.68	4.22	3.77	3.52	115	73	82	88
252		do	100,800	6250GT	61.03	1.22	----------	3.07	2.68	4.22	3.77	3.52	115	73	81	87
252		do	100,800	6250GT	61.07	1.22	----------	3.05	2.68	4.22	3.77	3.52	114	72	81	87
252		do	100,800	6250GT	60.71	1.20	----------	3.04	2.68	4.22	3.77	3.50	113	72	81	86
760.0	Pierce Mine, Hibbing, Minn	Granite City, Ill	125,910	6,000GT to 7,500 GT	41.52	.66	----------	5.07	5.51	8.80	7.40	7.22	92	58	69	70

(x) Computations made for Iron Mountain, Utah (Longest haul).

TABLE 118

Actual weight group: 150,001 to 160,000 pounds

Distance (actual miles) (1)	Origin (2)	Destination (3)	Average actual weight per car (4)	Minimum weight requirement (5)	Revenue per car-mile (6)	Revenue per ton-mile (7)	Note	Rate per net ton (8)	Variable cost per net ton (9)	Fully allocated cost per net ton: Ton and ton-mile (10)	Fully allocated cost per net ton: Car and car-mile (11)	Fully allocated cost per net ton: Dollar basis (12)	Ratio of rate to variable costs (13)	Ratio of rate to fully allocated costs: Ton and ton-mile (14)	Ratio of rate to fully allocated costs: Car and car-mile (15)	Ratio of rate to fully allocated costs: Dollar basis (16)
68	Randville, Mich	Escanaba, Mich	153,200	----------	100.17	1.31	----------	.85	1.26	2.34	1.63	1.63	67	36	52	52
68	do	do	150,900	MLT 5000GT per 1 B/L	96.04	1.27	----------	.85	1.29	2.19	1.67	1.67	66	39	51	51
90	Humboldt Mine, Mich	do	155,800	----------	79.78	1.02	----------	.85	1.26	2.08	1.61	1.68	67	41	53	51
91	Republic Mine, Mich	do	156,200	----------	72.98	.93	----------	.85	1.30	2.14	1.66	1.67	65	40	51	51
91	Iron River, Mich	do	132,200	----------	119.12	1.80	----------	1.64	1.18	2.02	1.61	1.59	139	81	102	103
120	Nashwauk & Keewatin, Minn	Allouez, Wis	155,904	12,000GT	98.60	1.26	----------	1.52	1.31	2.47	1.80	1.71	116	62	84	89
120	Nashwauk, Minn	Superior, Wis	156,800	----------	101.35	1.29	----------	1.59	1.32	2.49	1.81	1.73	120	64	88	92
133	do	do	156,800	----------	113.46	1.45	----------	1.78	1.32	2.49	1.81	1.73	135	71	98	103
127	Keewatin, Minn	do	156,800	----------	98.16	1.25	----------	1.58	1.34	2.52	1.83	1.75	118	63	86	90
127	do	do	156,800	----------	109.88	1.40	----------	1.78	1.34	2.52	1.83	1.75	133	71	97	102
686.8	Mt. Iron, Minn	Gary, Ind	145,600	6,000GT	59.80	.82	----------	5.22	4.55	6.90	5.95	5.88	115	76	88	89
1235.4	Buhl, Minn	Minnequa, Colo	158,416	6,000GT or 7,500 GT	48.50	1.71	----------	8.69	8.21	12.41	10.75	10.75	106	70	81	81
TABLE 119																
Actual weight group: 160,001 to 180,000 pounds																
64	Empire Mine, Mich	Escanaba, Mich	163,520	8,500GT	108.36	1.32	----------	.85	.87	1.63	1.17	1.13	98	52	73	75
64	do	do	163,600	----------	108.64	1.33	----------	.85	.87	1.63	1.17	1.12	98	52	73	76
64	do	do	161,280	2,310,000GT	146.25	1.81	----------	1.16	.88	1.64	1.19	1.13	132	71	97	103
68	Thunderbird, Minn	Duluth, Minn	168,000	----------	198.43	2.36	----------	1.63	.87	1.65	1.18	1.13	187	99	138	144
70.7	Mtn. Iron (Minntac), Minn	do	161,200	6,000GT	166.00	2.06	----------	1.54	.93	1.72	1.36	1.30	166	90	113	118
76	Eagle Mills, Mich	Escanaba, Mich	165,200	----------	92.38	1.12	----------	.85	1.17	1.96	1.44	1.51	73	43	59	56
88.6	Mtn. Iron (Minntac), Minn	Two Harbors Ore Docks, Minn	161,200	6,000GT	142.88	1.77	----------	1.54	.99	1.83	1.36	1.29	156	84	113	119
111	Nashwauk, Minn	Superior, Wis	161,280	4,500,000GT	110.27	1.37	----------	1.52	1.23	2.37	1.60	1.61	124	64	95	94
278.0	Winton Jct., Wyo	Geneva, Utah	179,200	7,500GT	92.09	1.03	----------	2.86	1.92	3.53	2.56	2.51	149	81	112	114
278.0	do	do	179,200	7,500GT	91.22	1.02	----------	2.83	1.92	3.53	2.56	2.51	147	80	111	113
278.0	do	do	179,200	7,500GT	89.78	1.00	----------	2.79	1.92	3.53	2.56	2.51	145	79	109	111
278.0	do	do	179,200	7,500GT	88.92	.99	----------	2.76	1.92	3.53	2.56	2.51	144	78	108	110
278.0	do	do	179,200	7,500GT	88.35	.99	----------	2.74	1.92	3.53	2.56	2.51	143	78	107	109
278.0	do	do	179,200	7,500GT	87.77	.98	----------	2.72	1.92	3.53	2.56	2.51	142	77	106	108
278.0	do	do	179,200	7,500GT	87.19	.97	----------	2.71	1.92	3.53	2.56	2.51	141	77	106	108
278.0	do	do	180,000	1,500GT	134.10	1.49	----------	4.18	1.91	3.52	2.55	2.50	219	119	164	167
278.0	do	do	180,000	3,000GT	128.06	1.42	----------	3.97	1.91	3.52	2.55	2.50	208	113	156	159
278.0	do	do	180,000	5,000GT	119.14	1.32	----------	3.70	1.91	3.52	2.55	2.50	194	105	145	148
278.0	do	do	180,000	6,500GT	109.35	1.22	----------	3.39	1.91	3.52	2.55	2.50	177	96	133	136
TABLE 120																
Actual weight group: 190,001 to 210,000 pounds																
265.0	Black River Falls, Wis	Indiana Harbor, Ind	201,600	----------	99.65	.99	----------	2.63	1.82	3.16	2.35	2.35	145	83	112	112
276.0	Cima, Calif	L.A. Harbor, Calif	198,360	5,000GT	110.61	1.13	----------	3.06	1.79	3.30	2.36	2.30	171	93	130	133

NOTES:
(1) Ex-Lake Iron Ore
(a) From U.S. origins to designated Upper Lake Ports on shipments which have had a prior common carrier haul.
(b) Foreign Ore, including from Canada.
(c) From U.S. origins to Upper Lake Ports (Silver Bay-Taconite Harbor) on shipments which have not had a prior common carrier haul.
(2) All-rail from Eastern origins.
(3) Import from Baltimore, Md., Philadelphia and Fairless, Pa.
(x) See Part 1(B)(a) for more complete cost data.
LFVC-Loaded to Full Visible Capacity
NCU-Rates not currently used.

The variable and fully allocated costs set forth in table 92 through 120 were based on the unit costs shown in *Rail Carload Cost Scales by Territories for the year 1972,* Statement No. 1C1-72, prepared by the Commission's Cost and Valuation Section. In addition, the costs in these tables reflect an updating to a 1973 level based on the methods outlined in *Rail Carload Cost Scales by Territories as of January 1, 1958,* Statement No. 2-58.

Variable costs consist of: 1) the variable portions of freight operating expenses, rents, and taxes (excluding Federal income taxes), and 2) the variable portion of the "cost of capital," excluding any allowance for Federal income taxes. Fully allocated costs consist of the variable costs plus an allocation of the constant costs which are composed of: 1) the constant portions of the freight operating expenses, rents, and taxes (excluding Federal income taxes), and 2) the constant, or remaining, portion of the "cost of capital."

When developing the fully allocated cost for a given movement, the variable cost (ultimately stated in cents per net ton for a comparsion to the rate) is developed first and to this cost there is then added an allocation of the constant costs. For comparison purposes fully allocated costs are shown on three bases, with constant costs being allocated on the ton and ton-mile basis, the car and car-mile basis, and the dollar basis. To develop the constant units costs per ton and per ton-mile and the constant unit costs per car and per car-mile, the dollar numerators, separated between those expenses and cost of capital not associated with distance (terminal) and those expenses and cost of capital associated with distance (line-haul), remain the same. However, the divisors change, that is, for the ton and ton-mile basis the tons originated and terminated and the ton-miles were used for the respective terminal and line-haul elements; and for the car and car-mile basis the loaded cars and the loaded car-miles were used in a similar way. The constant unit costs for each of the two bases were then applied to the respective tons and ton-miles, and cars and car-miles, generated by a particular movement. The allocated constant costs thus obtained for each basis are converted to constant costs per net ton, which were then added to the variable cost per net ton to produce the fully allocated costs per net ton for each basis. For the dollar basis an allocation ratio was developed for each region by dividing the total regional variable and constant costs by that region's total variable costs. The variable cost per net ton for a given movement was then multiplied by the applicable regional ratio to produce the fully allocated cost per net ton.

The variable costs shown in tables 92 through 120 reflect adjustments to territorial average costs to recognize certain transportation characteristics indicated in the exhibits of record, including the actual route of movement miles and the actual or average actual lading weights. For costing purposes hopper open-general service cars were used, and way and through costs were applied to the single- and multiple-car movements and only through costs to trainload movements. In addition the following adjustments were made to the single-car, multiple-car, and trainload movements.

For single-car movements, line-haul costs were adjusted by removing the interchange costs included in the territorial average costs on a loaded car-mile basis and substituting therefor the interchange cost per car interchanged and using the number of interchanges from the routings shown in exhibits of record. No adjustments were made to the terminal costs.

For multiple-car movements, terminal costs were adjusted by reducing the switching cost per carload by 50 percent at origin and destination, by reducing variable freight train car costs per carload by 50 percent at origin and destination, and by reducing station clerical costs per carload by assuming 75 percent of the cost as being associated with the car and 25 percent as being associated with the shipment. On multiple-car shipments where the number of cars per shipment was not shown, nor could be determined, we assumed an average of between 5 and 10 cars per shipment. Line-haul costs were adjusted by removing the interchange costs included in the territorial average costs on a loaded car-mile basis and substituting therefor the interchange costs per car interchanged and using the number of interchanges from the routings shown in the exhibits of record.

For trainload movements, terminal costs were adjusted by reducing the switching cost per carload by 75 percent at origin and destination, by reducing variable freight train costs per carload by 50 percent at origin and destination, and by reducing station clerical costs per carload by assuming 75 percent of the cost as being associated with the car and 25 percent as being associated with the shipment. Line-haul costs were adjusted by removing the interchange costs included in the territorial average cost on a loaded car-mile basis and substituting therefor the interchange cost per car interchanged (reduced by 50 percent) and using the number of interchanges from the routings shown in exhibits of record. Further, the territorial average inter- intra train switching cost per loaded car-mile was eliminated.

We have also developed frequency distribution tables by type of movements, rate territories and weight groups. These tables, 121 through 146, show the number of rate-to-cost ratios falling within ratio range groups of from below 95 percent to 230 percent and over, along with the composite simple average ratio for each column.

A total of 254 movements were costed out for iron ore from the exhibits of record. Of this total, 90 were costed out as single-car movements, 73 were costed out as multiple-car movements, and the remaining 91 were costed out as trainload movements.

Results of revenue/cost comparisons.—Of the total movements shown in table 92 through 120, 80 movements had rate-to-variable cost ratios below 100 percent. Under the ton and ton-mile method 178 movements had rate-to-fully allocated cost ratios of less than 100 percent, while under the car and car-mile and dollar bases there were 120 and 123 movements, respectively, having ratios less than 100 percent. Viewed in another way, of the total 254 movements, 31 percent failed to cover variable costs, whereas 70 percent failed to cover fully allocated costs using the ton and ton-mile method of allocating constant costs and 47 percent and 48 percent of the rates failed to cover the fully allocated costs using the car and car-mile and dollar bases of allocating constant costs, respectively. (See part III.)

TABLE 121

Frequency distribution of total movements

(Iron ore)

Total-all movements

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	70	160	110	115
95-99	10	18	10	8
100-109	8	25	23	24
110-119	22	22	23	24
120-129	14	11	20	15
130-139	18	6	17	14
140-149	24	3	16	17
150-159	12	1	8	9
160-169	12	4	8	6
170-179	13	3	2	5
180-230	35	1	13	11
231 and over	16	0	4	6
Total	254	254	254	254
Simple average ratio	134	85	106	105

TABLE 122

Frequency distribution of single-car movements

(Iron ore)

All weight groups

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	60	83	70	72
95-99	4	3	3	6
100-109	3	1	6	7
110-119	3	0	6	1
120-129	9	0	1	1
130-139	5	0	1	0
140-149	2	0	0	0
150-159	0	1	0	0
160-169	1	1	0	0
170-179	0	1	0	0
180-230	0	0	3	3
231 and over	3	0	0	0
Total	90	90	90	90
Simple average ratio	89	63	74	69

TABLE 123

Frequency distribution of single-car movements

(Iron ore)

Official-all weight groups

Ratio range (percent) (1)	Number of rate-to-cost ratios: Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on): Ton & Ton-mile basis (3)	Car & Car-mile basis (4)	Dollar basis (5)
Below 95	3	16	9	10
95-99	2	3	3	4
100-109	2	0	2	4
110-119	2	0	4	1
120-129	6	0	1	0
130-139	3	0	0	0
140-149	1	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	19	19	19	19
Simple average ratio	114	81	94	90

TABLE 124

Frequency distribution of single-car movements

(Iron ore)

Southern-all weight groups

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	1	7	4	5
95-99	1	0	0	1
100-109	1	0	2	1
110-119	1	0	1	0
120-129	2	0	0	0
130-139	1	0	0	0
140-149	0	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	7	7	7	7
Simple average ratio	112	76	92	85

TABLE 125

Frequency distribution of single-car movements

(Iron ore)

Western-all weight groups

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	56	60	57	57
95-99	1	0	0	1
100-109	0	1	2	2
110-119	0	0	1	0
120-129	1	0	0	1
130-139	1	0	1	0
140-149	1	0	0	0
150-159	0	1	0	0
160-169	1	1	0	0
170-179	0	1	0	0
180-230	0	0	3	3
231 and over	3	0	0	0
Total	64	64	64	64
Simple average ratio	79	56	67	61

TABLE 126

Frequency distribution of single-car movements

(Iron ore)

70,001 pounds to 100,000 pounds

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	3	3	3	3
95-99	0	0	0	0
100-109	0	0	0	0
110-119	0	0	0	0
120-129	0	0	0	0
130-139	0	0	0	0
140-149	0	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	3	3	3	3
Simple average ratio	70	53	56	54

TABLE 127

Frequency distribution of single-car movements

(Iron ore)

100,001 pounds to 130,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	6	7	7	7
95-99	1	0	0	0
100-109	0	0	0	0
110-119	0	0	0	0
120-129	0	0	0	0
130-139	0	0	0	0
140-149	0	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	7	7	7	7
Simple average ratio	75	56	63	58

TABLE 128

Frequency distribution of single-car movements

(Iron ore)

130,001 pounds to 160,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	50	57	55	56
95-99	2	0	2	1
100-109	2	0	0	0
110-119	1	0	0	0
120-129	2	0	0	0
130-139	0	0	0	0
140-149	0	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	57	57	57	57
Simple average ratio	71	52	60	55

TABLE 129

Frequency distribution of single-car movements

(Iron ore)

160,001 to 190,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	1	12	5	5
95-99	1	2	1	4
100-109	1	0	3	4
110-119	2	0	5	1
120-129	5	0	0	0
130-139	2	0	0	0
140-149	2	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	14	14	14	14
Simple average ratio	118	82	97	91

TABLE 130

Frequency distribution of single-car movements

(Iron ore)

190,001 to 220,000 pounds

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	0	3	0	1
95-99	0	1	0	1
100-109	0	1	3	2
110-119	0	0	0	0
120-129	2	0	1	1
130-139	2	0	1	0
140-149	0	0	0	0
150-159	0	1	0	0
160-169	1	1	0	0
170-179	0	1	0	0
180-230	0	0	3	3
231 and over	3	0	0	0
Total	8	8	8	8
Simple average ratio	181	118	150	139

TABLE 131

Frequency distribution of single-car movements

(Iron ore)

220,001-250,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	0	1	0	0
95-99	0	0	0	0
100-109	0	0	0	1
110-119	0	0	1	0
120-129	0	0	0	0
130-139	1	0	0	0
140-149	0	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	1	1	1	1
Simple average ratio	132	86	112	101

TABLE 132

Frequency distribution of multiple car movements

(Iron ore)

All weight groups

Ratio range (percent) (1)	Number of rate-to-cost ratios: Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on): Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	4	33	17	20
95-99	4	9	4	2
100-109	4	10	8	9
110-119	7	15	8	12
120-129	3	2	10	5
130-139	7	4	7	7
140-149	10	0	10	12
150-159	7	0	4	2
160-169	3	0	2	2
170-179	9	0	1	1
180-230	14	0	2	1
231 and over	1	0	0	0
Total	73	73	73	73
Simple average ratio	147	96	119	115

TABLE 133

Frequency distribution of multiple car movements

(Iron ore)

Official-all weight groups

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	0	9	3	4
95-99	0	6	2	1
100-109	2	5	0	1
110-119	2	14	5	8
120-129	1	2	6	2
130-139	1	4	5	6
140-149	6	0	10	12
150-159	4	0	4	2
160-169	1	0	2	2
170-179	8	0	1	1
180-230	14	0	2	1
231 and over	1	0	0	0
Total	40	40	40	40
Simple average ratio	167	106	135	131

TABLE 134

Frequency distribution of multiple car movements

(Iron ore)

Southern-all weight groups

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	2	20	10	12
95-99	3	3	2	1
100-109	2	5	8	8
110-119	4	1	3	4
120-129	2	0	4	3
130-139	6	0	2	1
140-149	4	0	0	0
150-159	3	0	0	0
160-169	2	0	0	0
170-179	1	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	29	29	29	29
Simple average ratio	129	86	103	99

TABLE 135

Frequency distribution of multiple car movements

(Iron ore)

Western-all weight groups

Ratio range (percent) (1)	Number of rate-to-cost ratios: Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on): Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	2	4	4	4
95-99	1	0	0	0
100-109	0	0	0	0
110-119	1	0	0	0
120-129	0	0	0	0
130-139	0	0	0	0
140-149	0	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	4	4	4	4
Simple average ratio	94	65	75	72

TABLE 136

Frequency distribution of multiple car movements

(Iron ore)

100,001 pounds to 130,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	2	6	6	6
95-99	1	0	0	0
100-109	1	0	0	0
110-119	2	0	0	0
120-129	0	0	0	0
130-139	0	0	0	0
140-149	0	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	6	6	6	6
Simple average ratio	100	71	79	76

TABLE 137

Frequency distribution of multiple car movements

(Iron ore)

130,001 pounds to 160,000 pounds

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	1	9	7	7
95-99	2	0	0	0
100-109	2	1	2	2
110-119	2	1	0	1
120-129	0	0	1	0
130-139	1	2	1	1
140-149	1	0	0	0
150-159	1	0	0	0
160-169	0	0	1	2
170-179	1	0	1	0
180-230	2	0	0	0
231 and over	0	0	0	0
Total	13	13	13	13
Simple average ratio	134	91	107	104

TABLE 138

Frequency distribution of multiple car movements

(Iron ore)

160,001 pounds to 190,000 pounds

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	1	14	2	4
95-99	0	5	3	2
100-109	0	9	6	6
110-119	3	14	6	7
120-129	2	2	6	5
130-139	5	0	6	6
140-149	5	0	10	12
150-159	6	0	4	2
160-169	3	0	1	0
170-179	8	0	0	0
180-230	11	0	0	0
231 and over	0	0	0	0
Total	44	44	44	44
Simple average ratio	158	101	127	124

TABLE 139

Frequency distribution of multiple car movements

(Iron ore)

190,001 to 220,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	0	4	2	3
95-99	1	4	1	0
100-109	1	0	0	1
110-119	0	0	2	4
120-129	1	0	3	0
130-139	1	2	0	0
140-149	4	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	1
180-230	2	0	2	1
231 and over	0	0	0	0
Total	10	10	10	10
Simple average ratio	150	96	124	118

TABLE 140

Frequency distribution of trainload movements

(Iron ore)

All weight groups

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	6	44	23	23
95-99	2	6	3	0
100-109	1	14	9	9
110-119	12	7	9	10
120-129	2	9	9	9
130-139	6	2	9	7
140-149	12	3	6	5
150-159	5	0	4	7
160-169	8	3	6	4
170-179	4	2	1	4
180-230	20	1	8	7
231 and over	13	0	4	6
Total	91	91	91	91
Simple average ratio	169	97	127	133

TABLE 141

Frequency distribution of trainload movements

(Iron ore)

Official-all weight groups

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	0	8	2	2
95-99	0	4	0	0
100-109	0	13	3	1
110-119	2	5	5	6
120-129	0	9	8	7
130-139	2	2	6	5
140-149	4	3	5	3
150-159	4	0	3	6
160-169	7	3	5	3
170-179	2	2	1	4
180-230	16	1	8	7
231 and over	13	0	4	6
Total	50	50	50	50
Simple average ratio	202	116	152	160

TABLE 142

Frequency distribution of trainload movements

(Iron ore)

Western-all weight groups

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	6	36	21	21
95-99	2	2	3	0
100-109	1	1	6	7
110-119	10	2	4	5
120-129	2	0	1	2
130-139	4	0	3	2
140-149	8	0	1	2
150-159	1	0	1	1
160-169	1	0	1	1
170-179	2	0	0	0
180-230	4	0	0	0
231 and over	0	0	0	0
Total	41	41	41	41
Simple average ratio	129	73	96	99

TABLE 143

Frequency distribution of trainload movements

(Iron ore)

100,000 pounds & 130,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	1	8	8	8
95-99	0	0	0	0
100-109	0	0	0	0
110-119	7	0	0	0
120-129	0	0	0	0
130-139	0	0	0	0
140-149	0	0	0	0
150-159	0	0	0	0
160-169	0	0	0	0
170-179	0	0	0	0
180-230	0	0	0	0
231 and over	0	0	0	0
Total	8	8	8	8
Simple average ratio	113	72	81	86

TABLE 144

Frequency distribution of trainload movements

(Iron ore)

130,001 pounds to 160,000 pounds

Ratio range (percent)	Number of rate-to-cost ratios			
	Rate to variable costs	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis	Car and car-mile basis	Dollar basis
(1)	(2)	(3)	(4)	(5)
Below 95	4	14	9	9
95-99	0	4	2	0
100-109	1	4	3	5
110-119	3	3	2	2
120-129	1	1	6	6
130-139	5	0	0	0
140-149	2	2	3	0
150-159	2	0	1	4
160-169	4	0	0	0
170-179	0	0	0	0
180-230	4	0	2	2
231 and over	2	0	0	0
Total	28	28	28	28
Simple average ratio	146	87	110	115

TABLE 145

Frequency distribution of trainload movements

(Iron ore)

160,001 pounds to 190,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios			
	Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on)		
		Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	1	20	6	6
95-99	2	2	1	0
100-109	0	9	6	4
110-119	2	3	6	7
120-129	1	7	3	3
130-139	1	2	8	6
140-149	9	1	2	5
150-159	3	0	3	2
160-169	4	3	5	4
170-179	3	2	1	3
180-230	14	1	5	4
231 and over	10	0	4	6
Total	50	50	50	50
Simple average ratio	189	106	141	148

TABLE 146

Frequency distribution of trainload movements

(Iron ore)

190,001 to 220,000 pounds

Ratio range (percent) (1)	Number of rate-to-cost ratios: Rate to variable costs (2)	Rate-to-fully-allocated costs (Constant costs distributed on): Ton and ton-mile basis (3)	Car and car-mile basis (4)	Dollar basis (5)
Below 95	0	2	0	0
95-99	0	0	0	0
100-109	0	1	0	0
110-119	0	1	1	1
120-129	0	1	0	0
130-139	0	0	1	1
140-149	1	0	1	0
150-159	0	0	0	1
160-169	0	0	1	0
170-179	1	0	0	1
180-230	2	0	1	1
231 and over	1	0	0	0
Total	5	5	5	5
Simple average ratio	192	105	148	150

As would be expected, the ton and ton-mile basis of allocating constant costs assigns a relatively larger portion of constant costs to the various movements because of heavy loading, and, therefore, there is a relatively larger number of rate-to-fully allocated cost-ratios below 100 percent on the ton and ton-mile basis than for the car and car-mile and dollar bases.

A comparison of the total 254 movements by originating rate territories, official, southern and western, reveals the following. The number of rate-to-variable cost ratios below 100 percent were 5 percent for the official and 19 percent for the southern territory. In the western territory, however, approximately 62 percent of the rates were below variable costs. Likewise, with respect to the number of rate-to-fully allocated cost ratios below 100 percent, western territory had the highest percentage of rates below fully allocated costs with 94 percent on a ton and ton-mile basis and 78 and 76 percent on a car and car-mile and dollar basis, respectively. In comparison, the official territory had 42, 17 and 19 percent of the rates below 100 percent on a ton and ton-mile, car and car-mile and dollar basis, respectively, and in the southern territory 83, 44 and 53 percent of the rates were below 100 percent on the ton and ton-mile, car and car-mile and dollar basis of distributing constant costs.

The results are shown in table 147 below.

TABLE 147

Number and percent of movements of iron ore having revenues below variable and fully allocated costs, by origin territories and by type of shipment[1]

	Total U.S. (2)		Official (3)		Southern (4)		Western (5)	
Total movements:								
Single car	90		19		7		64	
Multiple car	73		40		29		4	
Trainload	91		50		0		41	
Total	254		109		36		109	
	Number (a)	Percent (b)	Number (a)	Percent (b)	Number (a)	Percent (b)	Number (a)	Percent (b)
Movement with revenue below variable costs:								
Single car	64	71	5	26	2	29	57	89
Multiple car	8	11	0	0	5	17	3	75
Trainload	8	9	0	0	0	0	8	20
Total	80	31	5	5	7	19	68	62

Number and percent of movements of iron ore having revenues below variable and fully allocated costs, by origin territories and by type of shipment[1]—Continued

	Number (a)	Percent (b)	Number (a)	Percent (b)	Number (a)	Percent (b)	Number (a)	Percent (b)
Movements with revenue below fully allocated costs:								
Ton & ton-mile basis:								
Single car	86	96	19	100	7	100	60	94
Multiple car	42	58	15	38	23	79	4	100
Trainload	50	55	12	24	0	0	38	93
Total	178	70	46	42	30	83	102	94
Car & car-mile basis:								
Single car	73	81	12	63	4	57	57	89
Multiple car	21	29	5	13	12	41	4	100
Trainload	26	29	2	4	0	0	24	59
Total	120	47	19	17	16	44	85	78
Dollar basis:								
Single car	78	87	14	74	6	86	58	91
Multiple car	22	30	5	13	13	45	4	100
Trainload	23	25	2	4	0	0	21	51
Total	123	48	21	19	19	53	83	76

[1] Movements based on those provided by the railroads. Costs developed by the Commission's cost and valuation section utilizing adjusted territorial average costs from ICC Statement No. IC1-72, *Rail Carload Cost Scales 1972.*

For the 90 single-car movements shown in tables 92 through 120, 64 movements had rate-to-variable cost ratios below 100 percent. Under the ton and ton-mile method 86 of the 90 movements shown had rate-to-fully allocated cost ratios of less than 100 percent, while under the car and car-mile and dollar bases there were 73 and 78 movements, respectively, having ratios less than 100 percent. Viewing the results in terms of percentages, of the 90 single-car movements shown in table 92 through 120, 71 percent failed to cover variable costs whereas 96 percent failed to cover fully allocated costs using the ton and ton-mile method of allocating constant costs and 81 percent and 87 percent of the rates failed to cover the fully allocated costs using the car and car-mile and dollar bases of allocating constant costs, respectively. Single-car movements as a whole had a composite simple average ratio of rate-to-variable costs of 89 percent. Under the ton and ton-mile, car and car-miles, and dollar bases the composite simple average ratios were 63 percent, 74 percent, and 69 percent, respectively.

For the 73 multiple-car movements, 8 of these movements had a rate-to-variable-cost ratio of less than 100 percent, that is, 8 rates were below variable costs. Of the 73 multiple-car movements, 15 had a rate-to-variable-cost ratio of 180 percent and over. On a ton and ton-mile basis 42 movements had a rate-to-fully-allocated-cost ratio of less than 100 percent whereas 21 movements were below 100 percent on a car and car-mile basis, as were 22 movements on a dollar basis.

Multiple-car movements as a whole had a composite simple average ratio of rate to variable costs of 147 percent. Under the ton and ton-mile, car and car-mile, and dollar bases, the composite simple average ratios were 96 percent, 119 percent, and 115 percent, respectively.

Finally, for the 91 trainload movements, only 8 of these movements had a rate-to-variable-cost ratio of less than 100 percent, that is, only 8 rates were below variable costs. Of these 91 trainload movements, 33 had a rate-to-variable-cost ratio of 180 percent and over. On a ton and ton-mile basis 50 movements had a rate-to-fully-allocated-cost ratio of less than 100 percent whereas 26 movements were below 100 percent on a car and car-mile basis, as were 23 movements on a dollar basis.

Trainload movements as a whole had composite simple average ratio of rate to variable costs of 169 percent. Under the ton and ton-mile, car and car-mile, and dollar basis the composite simple average ratios were 97 percent, 127 percent, and 133 percent, respectively.

A comparison of the data by type of movement and originating region reveals the following: the number of rate-to-variable-cost ratios below 100 percent on single-car movements within the official and southern territory are about the same with 26 percent of the rates below variable costs in the official territory and 29 percent in the southern territory. However, in the western territory 89 percent of the rates were below variable costs. In the case of multiple-car movements, there were no rates shown below variable costs in the official territory, whereas in the southern and western region there were 17 and 25 percent of the rates shown below variable costs. For trainload movements, there were no rates below variable costs in the official territory and the rates on only 8 movements (20 percent) were below variable costs in the western region. No trainload movements were shown as originating in the southern territory.

Turning to the various weight groupings by type of movement, it can be seen from table 148 below that, percentagewise, the number of rates failing to exceed variable and fully allocated costs decreases at the higher weight groups.

TABLE 148

Number and percent of representative movements having revenues below their variable and fully allocated costs by weight groups[1]

Weight groups	Total number of movements in each Weight group	Revenues below variable cost		Revenues below fully allocated costs				Dollar	
				Ton & ton-mile		Car & car-mile		Car & car-mile	
		Number	Percent	Number	Percent	Number	Percent	Number	Per cent
Pounds									
40,000-70,000	0	0	0	0	0	0	0	0	0
70,001-100,000	3	3	100	3	100	3	100	3	100
100,001 130,000	21	11	52	21	100	21	100	21	100
130,001-160,000	98	59	60	84	86	75	77	73	74
160,001-190,000	108	6	6	55	51	18	17	21	19
190,001-220,000	23	1	4	14	61	3	13	5	22
220,001-250,000	1	0	0	1	100	0	0	0	0
Total	254	80	31	178	70	120	47	123	48

[1] Movements based on those provided by the railroads. Costs developed by the Commission's Cost and Valuation Section utilizing adjusted territorial average costs from ICC Statement No. 1C1-72, *Rail Carload Cost Scales 1972.*

It should be observed that even though the costs have been developed for these so-called representative movements, there is no indication in this report as to the annual volume of traffic moving under the applicable rates. If an analysis of the compensatory nature of the entire rate structure is desired a "volume" factor will, of course, have to be introduced.

Several interested parties have submitted evidence of cost of service for some of the representative movements of record. An analysis of this cost data along with other pertinent cost evidence will be presented in other sections of this report.

Part I (D)(4): Analysis of other cost evidence.

This segment of the investigation will focus upon an analysis of the individual revenue/cost relationships considered by respondents' pleadings. A total of 54 verified statements were submitted in this proceeding by the various railroads, shippers and consumer interests. Of these statements, six were verified opening statements containing evidence of cost of service. Statements containing cost evidence were submitted on behalf of:

1. The National Steel Corporation
2. Alan Wood Steel Company
3. Joint statement of:
   a. Jones and Laughlin Steel Corporation
   b. Crucible, Inc.
   c. Wheeling-Pittsburgh Steel Corporation
   d. Shenango, Inc.
   e. Empire-Detroit Steel Division, Detroit Steel Corporation.
4. Southern Railway System.
5. Joint statement of:
   a. The Cleveland Cliffs Iron Company.
   b. The Hanna Mining Company.
   c. Oglebay Norton Company.
   d. Pickands Mather and Company.
   e. Pittsburgh Pacific Company.
   f. Rhude and Fryberger, Inc.
6. Joint statement of:
   a. Armco Steel Corporation.
   b. Inland Steel Company.
   c. Republic Steel Corporation.
   d. Youngstown Sheet and Tube Company.

RAILROADS, SHIPPERS, AND CONSUMER INTERESTS COST EVIDENCE, REBUTTAL, AND SURREBUTTAL EVIDENCE AND COMMENTS

Verified Statement Number 3.—Verified Statement Number 3 was submitted on behalf of National Steel Corporation (NSC), a large user of rail transportation for the movement of iron ore. This party engaged the services of a transportation consultant (G. W. Fauth and Associates) to conduct a cost study of iron ore traffic from Cleveland, Ohio to Weirton, W. Va. This traffic reportedly represents the majority of the iron ore traffic to NSC's plant at Weirton. Based on this study, consultant contends that the revenues paid to the railroads for transportation of iron ore exceeds the variable costs by a wide margin and makes a substantial contribution to the rail carriers' overhead burden.

Consultant states that in 1973, NSC's Steel Division at Weirton received a total of 4,060,746 gross tons (2,240 pounds) of iron ore. As can be seen in table 149 below, 88 percent of the Weirton inbound traffic originated at Cleveland.

TABLE 149

1973 Weirton inbound rail shipments of iron ore

Rail origin	Total long tons (pounds)	Percent of total	Total carloads	Tons (2,000 pounds) per car
Cleveland, Ohio	3,572,210	88.0	46,864	85.4
Philadelphia, Pa.	39,219	1.0	521	86.4
Ashtabula, Ohio	50,172	1.2	634	88.6
Keewatin, Minn	230,922	5.7	4,013	64.4
Detroit, Mich	168,223	4.1	2,344	80.4
Total	4,060,746	100.0	54,376	83.6

Consultant developed costs for the Cleveland-Weirton movements based on a Rail Form A, *Formula For Use in Determining Rail Freight Service Costs* utilizing expenses and statistics of the Penn Central for the year 1973. The Cleveland-Weirton traffic of NSC is handled exclusively via the Penn Central.

Consultant argues that the operating characteristics of the Cleveland-Weirton iron ore movements are such that the average performance factors developed in Rail Form A for system average carload traffic do not accurately reflect the cost characteristics of the Cleveland-Weirton iron ore movements. Therefore, the following adjustments were made to the Rail Form A unit costs of the Penn Central.

1. *Origin switching.*—Origin switch engine-minutes for iron ore handled at Cleveland were developed based on actual work shifts, crew assignments, and the loading times. These minutes were divided by the total number of loaded iron ore cars handled by the Penn Central at Cleveland in 1973. Below is a recap of the development of the switch engine-minutes.

TABLE 150

Engine switching minutes

1. Engine shifts per week	31
2. Minutes per shift	480
3. Weeks per year	40
4. Loaded cars	89,620
5. Minutes per loaded car (Line 1 x line 2 x line 3) ÷ line 4.	6.64

The 6.64 minutes developed for origin switching of iron ore at Cleveland contrasts with the Penn Central's system average origin switching of 30 minutes per loaded car.

2. *Destination switching.*—For destination switching at Weirton, consultant indicates that for an average trainload of 90 cars, it takes one switch engine crew an average of 480 minutes. Distributing these switch engine-minutes over the number of cars in the average trainload (90) yields 5.33 minutes per loaded car.

3. *Station clerical.*—Consultant notes that the issue traffic from Cleveland to Weirton averages 90 cars per shipment. Thus it is assumed that only one waybill is prepared for the entire 90-car shipment. As a result, station clerical costs were adjusted on the assumption that 50 percent of the clerical costs varies with the shipment and 50 percent with the carloads. The station clerical adjustment was made by adding the carload portion of the expense (50 percent of the total) to the shipment portion expressed as a cost per carload based on the average 90 cars in the shipment (50 percent divided by 90 cars).

4. *Loss and damage expense.*—Loss and damage costs were taken from ICC Statement No. 1C1-70, *Rail Carload Cost Scales by Territories for the year 1970,* Commodity 10,000-10,999.

5. *Line-haul costs.*—The line-haul costs were adjusted to reflect the actual number of locomotive units used and the actual average trailing tons (train weight) for this movement. Consultant adjusted the costs on the basis of three locomotive units per movement. While an adjustment for train weight was reportedly made, the actual train weights were not shown. Further, the costs were adjusted to reflect differences in train wages since the crews on the portion of the movements from Cleveland to Hudson, Ohio, are paid way train wages rather than through train wages. For the remainder of the movement for Hudson to Weirton through train crew wages were used.

In order to determine the weighted average car tare weight, and the average number of days on which per diem was paid, a 2-percent random sample of the iron ore traffic from Cleveland to Weirton was obtained. All Penn Central waybills covering the movements from Cleveland to Weirton for the year 1973 that ended with the digits 25 and 71 were selected. A total of 290 different cars appeared in the sample.

To compute the average turnaround time, the days were counted between waybill dates where the cars appeared more than once. The average cycle time on cars with successive outbound loading from Cleveland was 10.04 days.

A weighted average tare weight of 25.8 tons was developed by grouping the cars from the sample by car series with common tare weights, per diem rates, and mileage rates. The tare weight for each series, obtained from the *Light Weight Register*, was multiplied by the associated number of loads to obtain the total tare weight. The total tare weights for each series were then added together and divided by the total loads to obtain the average tare weight.

Per diem and mileage rates for each car series were developed using the AAR *Car Hire Master List No. 15* by the same procedure described above in computing the average tare weight. Consultant arrived at a weighted average per diem and mileage rate of $2.95 per day and 2.36 cents per mile, respectively.

The resulting per diem cost of $2.95 per day was multiplied by the 10.04 average turnaround days. Further, the mileage cost of 2.36 cents was multiplied by the average round-trip miles between Cleveland and Weirton of 237.6 miles (loaded plus 100 percent empty). The total car-day and car-mile costs per trip were then added together to arrive at a car cost of $35.23 per loaded car.

Based on the above adjustments, consultant developed a 1973 variable cost for the Cleveland-Weirton movement of $1.19 per net ton. When compared to the average revenue of $2.86 per net ton, the resulting ratio of revenue to variable cost is 240.3 percent.

In addition, consultant states the NSC paid the Penn Central revenues of $11,398,354 in 1973 to transport 3,993,139 tons of iron ore from Cleveland to Weirton. Thus, NSC incurred expenses of $4,751,835 ($1.19 x 3,993,139) and obtained a contribution of $6,681,428 above the variable cost ($11,398,354 minus $4,751,835).

Rebuttal.—No rebuttal evidence to this statement has been received.

Comments.—We are unable to verify the costs developed by consultant since the application of Rail Form A to the expenses and statistics of Penn Central was not submitted.

However, a comparison was made between the Penn Central unit costs developed by this consultant for the year 1973, and the 1972 and 1974 Penn Central unit costs developed by H. W. Williams in his Verified Statement Number 4 in this same proceeding and the Commission's preliminary 1973 Rail Form A unit costs for Region II, Official Territory Excluding New England. The comparison shows that a reasonable relationship exists between the three applications.

We are also unable to verify the accuracy of the special study data relating to switching minutes, car days, number of locomotive units, train weights, et cetera. However, we recognize that certain economies of scale are associated with the iron ore traffic from Cleveland to Weirton. As a result, we generally agree with the type of adjustments made by consultant to the system variable costs.

However, the station clerical portion of the costs was adjusted to reflect 50 percent of the costs to be variable with the shipment and 50 percent variable with the carload. The Commission's procedure as utilized in our Burden Study for the station clerical adjustment is to assign 75 percent of the costs to the carload portion and 25 percent to the shipment portion. However, the resulting differences in the unit costs and the total variable costs produced by the two methods is minimal.

A comparison of the weighted average tare weight shown by consultant of 25.8 tons compares favorably with the tare weight for open-hopper general service cars of 26.0 tons shown in Commission Statement No. 1C1-72.

Verified Statement Number 4.—This verified statement was submitted by the *Alan Wood Steel Company* (AWSC). This company employed a transportation consultant (Harter W. Williams) to conduct a study of the import iron ore traffic from the port of Philadelphia, Pa., to the AWSC steel plant at Swedeland, Pa.

The purpose of this study was to develop the relationship between the revenue derived from this traffic and the variable and fully allocated costs of transportation for the year 1972, updated to the April 1974 level.

The plant at Swedeland is served from the port of Philadelphia by two carriers; the Penn Central Transportation Company and the Reading Company.

Consultant developed the costs for the study traffic through separate applications of Rail Form A, *Formula For Use In Determining Rail Freight Service Costs* to the expenses and statistics for the Penn Central and the Reading based on their operations for the year 1972. Costs were also developed to April, 1974 by the cost updating method as outlined in Commission Statement No. 2-58, *Rail Carload Cost Scales by Territories as of January 1, 1958.*

Costs were developed for railroad-owned open hopper cars. Tariff mileages of the routes actually operated by the Reading Company and the Penn Central were used. Weights of lading were based on the average load per car for iron ore traffic of 65.77 gross tons (2240 pounds) for the Reading Company and 66.20 gross tons for the Penn Central based on AWSC's cars received in import iron ore from Philadelphia to Swedeland.

Adjustments to the Rail Form A system average service unit costs were made based on actual operating conditions. Specifically, adjustments were made to the following items:

1. Tare weight of cars.
2. Number of locomotive units per train.
3. Origin switching.
4. Line-haul switching.
5. Destination switching
6. Station clerical costs.
7. Special services expenses.
8. Loss and damage expenses.
9. Empty return ratios
10. Per diem costs.

A discussion of the special studies (observations) used for these adjustments follows:

1. *Tare weights* of 24.86 net tons (2,000 pounds) for the Reading Company and 24.82 net tons for the Penn Central were obtained by visual inspection of the tare weights stenciled on the railroads' cars originating the iron ore traffic by each railroad at Swedeland.

2. *Number of locomotive units per train and train weights.*—The number of locomotive units were determined by observation of the

makeup of the trains for the issue traffic. Consultant's observation revealed an average of three locomotive units per movement.

Train weights for the Philadelphia to Swedeland iron ore movements handled by each railroad were calculated from the composite of the number of cars per train, the tare weight per car observed, and the average load per car received by AWSC via each railroad. A train weight of 7,604 net tons of cars and contents was computed for the Reading Company and 6,953 net tons for the Penn Central.

3. *Origin switching.*—It was observed that the Reading handled blocks of 18 to 20 cars at a time in loading the ore at the port of Philadelphia. On this basis consultant estimated that it took 6.74 switching minutes per loaded car at origin. These minutes were further increased by 15 percent for nonproductive time.

Because of better track layout and faster ore handling at its Philadephia pier, the Penn Central was reportedly able to handle cuts of 80 cars at a time. Consultant indicates this resulted in a handling rate of approximately 21 loads per hour which results in 3 minutes per loaded car. This figure was also increased by 15 percent for nonproductive time.

4. *Line-haul switching.*—The consultant indicates that there was normally no such switching. Intermediate (interchange and intra- and intertrain) switching costs were eliminated for both railroads from the port of Philadelphia to Swedeland.

5. *Destination switching.*—The consultant states that destination switching at Swedeland consisted of placement of loaded ore cars on an interchange track by the line-haul railroad and the pulling of empties from the interchange track. Further, this switching to the AWSC plant is reportedly performed by the Upper Merion and Plymouth Railroad Company for which it receives a switching allowance. Therefore, interchange switching was substituted for destination switching. Consultant states that since the interchange switching at Swedeland is accomplished in large blocks of cars, the interchange cost was in turn adjusted. The effect of this adjustment was to reduce the switching time to less than 1 minute per loaded car.

6. *Station clerical.*—The consultant notes that normally only one waybill is prepared in those instances where the entire shipment moves in trainload lots. Consultant adjusted station clerical costs by assuming that 50 percent of the clerical costs vary with the shipment and 50 percent with the car. The station clerical adjustment is made by adding the carload portion of the expense (50

percent of the total) to the shipment portion expressed as a cost per carload based on the average number of cars in the shipment.

7. *Special services.*—Special service costs were removed on the basis that no special service costs are incurred by either railroad at destination.

8. *Loss and damage expense.*—Loss and damage costs were based on the actual claim experience of AWSC in 1972 and 1973.

9. *Empty return ratios.*—Empty return ratios of 1.90 for the Reading Company and 1.84 for the Penn Central were based on the empty return ratios for open-top hopper cars as reported by those two railroads to the Interstate Commerce Commission.

10. *Per diem costs.*—An average per diem rate of $2.60 was used for both railroads. The average mileage rental rate used was $0.0107 for the Reading Company and $0.0227 for the Penn Central. These figures were furnished by the destination switching company, the Upper Merion and Plymouth Railroad Company. These figures were increased by the general overhead ratio of each railroad.

Based on the above adjustments, consultant developed the variable cost of handling the involved traffic by the Reading Company and the Penn Central for the years 1972 and 1974. These costs were then compared with the revenues derived from the issue traffic to develop cost/revenue comparisons. In addition, a composite cost/revenue comparison was developed for the two carriers combined for the year 1974. The weighting of the costs for the two carriers was calculated on the basis of the percentage distribution between the two railroads in transporting iron ore traffic for the years 1972 and 1973. Below is a summary of the results.

TABLE 151

Variable and fully allocated cost per gross ton v. revenue per gross ton for iron ore moving between the port of Philadelphia and Swedeland, Pa.

Item	Penn Central		Reading		Combined
	1972 (2)	1974 (3)	1972 (4)	1974 (5)	1974 (6)
(1)					
Revenue	$1.972	$2.490	$1.972	$2.490	$2.490
Variable cost	0.893	1.023	0.783	0.890	0.966
Fully allocated cost	1.860	2.119	1.494	1.691	1.935
Ratio: revenue to					
Variable cost	2.21	2.43	2.52	2.80	2.58
Fully allocated cost	1.06	1.18	1.32	1.47	1.29

As can be seen from the preceding table, the iron ore movements between the port of Philadelphia and Swedeland are estimated by AWSC to be compensatory at both the variable and fully allocated levels of cost. The ratio of revenue to cost decreases significantly from the variable cost level to the fully allocated level. It is consultant's opinion that this wide variation of the ratios is due to the arbitrary allocation of constant costs on a ton and ton-mile basis which distributes more costs to heavier shipments than would be allocated by any other method of constant cost distribution.

Rebuttal statements.—No rebuttal statements to this initial statement have been received.

Comments.—As in other large-scale iron ore movements, the movements from the port of Philadelphia to Swedeland reflect economies occasioned by the unit train or a multiple-car type of operation.

Although the underlying workpapers are not part of the record of this proceeding, the Rail Form A unit costs and updating procedures appear to be reasonable, i.e., a comparison of the 1973 Penn Central unit costs developed by G. W. Fauth in Verified Statement No. 3 to the unit costs developed for this statement indicates a reasonable relationship.

AWSC's 10 adjustments to the unit costs designed to more accurately reflect actual transportation characteristics are, for the most part, based on personal observation. It is not possible to determine from the text the length of time spent making these observations. Apparently the observation times were not selected by sampling techniques. Furthermore, no attempt was made to show that the estimates are representative of the issue traffic.

The average origin switching time of 3 minutes per loaded car developed for the Penn Central would amount to a 90-percent reduction in the system average engine-minute cost.[18] A reduction of this magnitude should be supported by more reliable evidence rather than merely the statement that it was based upon observations.

The description of origin switching from the Reading Company at the port of Philadelphia is also vague. The statement is made that 18 to 20 loads per hour could be handled, resulting in an average switching time of 6.74 minutes per loaded car. The relationship between the 18 to 20 loads per hour and the 6.74 minutes per loaded car is not explained.

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[18] According to witness Fauth, Verified Statement No. 3, p. 15, Penn Central's Rail Form A average switching time for all traffic is in excess of 30 minutes.

It is argued the destination switching cost is based on cars interchanged at the Upper Merion and Plymouth R.R. Co. tracks in large blocks at a rate of less than 1 minute per car. There is no indication that the interchange switching time has been documented by the use of a switching study. Comparing the 1-minute interchange switching time developed by AWSC to the 1972 region II average of 14.09 minutes per loaded or empty car would show a reduction of 93 percent for interchange cost which, as is the case of the origin switching reduction is based on no evidence other than that the operation was observed. We also note that AWSC has excluded from the cost of destination switching the allowance paid to the upper Merion and Plymouth R.R. If that allowance is paid by the Penn Central and Reading railroads then the allowance should be included as part of the cost of service.

No traffic statistics were cited for AWSC's total iron ore traffic for the year 1972 or 1973. From the evidence submitted it is not known if the plant at Swedeland is AWSC's only plant. There also was no indication of whether the Swedeland plant receives 100 percent of its iron ore from the two carriers involved in their cost study.

The explanation of the mileages of the two carriers between Philadelphia and Swedeland is vague. The witness for the AWSC cites the tariff mileages of the routes actually operated by the Reading Co. (16.7) and the Penn Central (46.0). There is no indication of whether or not these mileages include circuity.

Consultant indicates only that the lading weights reflected the AWSC's receipts of import iron ore from Philadelphia via the two railroads. No indication was given as to how the average lading weights were determined, nor what time period was used.

The tare weight of 76.6 net tons for region III compares favorably with the lading weights shown by the witness for AWSC of 74.1 and 73.7 for the Reading Company and the Penn Central respectively.

The witness for AWSC adjusted station clerical costs by assuming 50 percent of the cost as being variable with the shipment and 50 percent with the number of cars per trainload. AWSC has offered no support for this adjustment. The Cost and Valuation Section adjustment in its "Burden Study" assigns 75 percent to the carload cost and 25 percent to the number of cars per trainload. However, the resulting difference between the AWSC's method and the Burden Study method of adjustment make little difference to the final costs.

The per diem rate for each carrier should have been used separately for each carrier rather than employing an average per diem rate to both carriers.

No evidence has been offered in support of the majority of AWSC's other cost adjustments.

We note that the Commission's order in this proceeding required that revenues and costs be shown at the September 1973 level whereas AWSC has updated costs to the April 1974 level.

In summary, we cannot determine the validity of the cost-revenue comparisons calculated by AWSC due to a lack of supporting evidence. However, we believe that the costs are probably understated.

VERIFIED STATEMENT NUMBER 10

Verified Statement Number 10 was submitted on behalf of Jones & Laughlin Steel Corporation, Crucible, Inc., Wheeling-Pittsburgh Steel Corporation, Shenango Incorporated, and the Empire-Detroit Steel Division of Detroit Steel Corporation. These companies, hereinafter referred to as the Five Company Group, employed the services of a transportation consultant (Frank S. Harris) to conduct a cost study of certain ex-lake iron ore traffic.

The ex-lake iron ore traffic under study originates primarily from five Lake Erie ports and terminates at destinations in Pennsylvania and Ohio. The purpose of revenue/cost comparisons, a sample of seven major origin-destination movements that represent almost 70 percent of the 1973 total traffic for the Five Company Group, was selected.

The Five Company Group notes that, although the ex-lake iron ore movements are not specifically designated as unit-train movements, the higher train weights and number of cars per train lend themselves directly to this type of movement. A 1973 study developed by the Five Company Group shows an average of 110 cars per train.

The consultant developed variable costs for the involved traffic based on the Commission's Statement No. ICI-70, *Rail Carload Cost Scales by Territories for the Year 1970*, indexed to the April 1, 1974, cost level. The consultant's method of updating was not explained. For costing purposes, region II (official, excluding New England) variable unit costs for open-hopper general service cars were used.

The consultant states that, in order to reflect the actual operating characteristics of the issue traffic, the following adjustments were made to the regional average costs.

1. *Origin and destination terminal costs:*
    a. Average switching minutes per carload.
    b. Ratio of empty to loaded cars switched.
    c. Station clerical.
    d. Station employees special service.
    e. Removal of station platform.

2. *Line-haul costs:*
    a. Train weight.
    b. Number of locomotive units.
    c. Interchange switching.
    d. Inter- and intratrain switching.

The consultant for the Five Steel Companies explains that interchange costs were reduced on the basis that the issue traffic is switched in multiple and trainload lots which requires less time than the regional average. The actual number of interchanges were used rather than regional averages. The other adjustments were not explained.

Revenue/cost comparison and contribution.—Based on the above adjustments, and utilizing 1973 annual tonnages, the consultant developed variable costs for the movements shown in table 152 below. These costs, stated in cents per gross ton, are at the April 1, 1974, level and are compared with the rates per gross ton as of the same date. Also shown are the rate to variable cost ratios for each movement.

TABLE 152

Ratio revenue to variable costs for seven principal iron ore movements

Origin	Destination	As of April 1, 1974		Ratio rate to cost
		Rate per ton[a]	Cost per ton[a]	
		Cents	*Cents*	
Ashtabula, Ohio	Pittsburgh, Pa	408.0	229.0	1.78
Do	Aliquippa, Pa	354.0	219.2	1.61
Cleveland, Ohio	Midland, Pa	354.0	173.7	2.04
Conneaut, Ohio	Monessen, Pa	430.0	252.2	1.70

Ratio revenue to variable costs for seven principal iron ore movements—Continued

Origin	Destination	As of April 1, 1974		Ratio rate to cost
		Rate per ton[a]	Cost per ton[a]	
		Cents	*Cents*	
Huron, Ohio	Mingo Jct., Ohio	354.0	159.5	2.22
Ashtabula, Ohio	Neville Is., Pa	354.0	224.8	1.57
Huron, Ohio	New Boston, Ohio	442.0	218.3	2.02
Composite ratio[b]				1.84

[a] Gross tons (2,240 pounds).
[b] Weighted on the basis of 1973 annual tonnage.

The consultant shows a breakdown of the 1973 annual tonnage for the above origins and destinations. Applying the above rate and cost per ton to these tonnages results in the following contribution in table 153. Also shown are the contributions in terms of dollars.

TABLE 153

Contribution in excess of variable cost for seven principal movements[a]

Origin	Destination	1973 Annual volume (tons)	Contribution per gross ton[b]	Contribution (000)
Ashtabula, Ohio	Pittsburgh, Pa	903,711	$1.79	$1,618
Do	Aliquippa, Pa	1,963,058	1.35	2,650
Cleveland, Ohio	Midland, Pa	802,294	1.80	1,444
Conneaut, Ohio	Monessen, Pa	765,961	1.78	1,363
Huron, Ohio	Mingo Jct., Ohio	1,180,586	1.94	2,290
Ashtabula, Ohio	Neville Is., Pa	292,757	1.29	378
Huron, Ohio	Portsmouth, Ohio	319,292	2.24	715
Total		6,227,659		10,458

[a] 1973 tonnage at April 1, 1974, rate and variable cost levels.
[b] Rate per ton less cost per ton as of April 1, 1974.

It can be seen that the total contribution of the study traffic is $10 million in excess of the carriers' variable costs.

Relativity of rail rate levels between consumer destination groups.—A witness for the Five Company Group refers to Ex Parte

No. 267 wherein representatives of the Youngstown Group of ex-lake iron ore shippers contended that the iron ore rate levels should be restored to the 1916 relationships.

The witness notes that in the iron ore rate case decided in 1916, 41 I.C.C. 181, the Interstate Commerce Commission established rates and rate groups for ex-lake iron ore based primarily on the differences in operating mileages from Lake Erie ports to destination group steel mills. The witness argues that the 1916 case gave no consideration, in determining the rate structure, to factors other than line-haul mileages. The only quantitative determinant available in 1916 on which to base the establishment of rate groups, rate levels, and the relationship between the groups was the respective mileages applicable to them.

This witness also notes that now, through the use of Rail Form A, use of mileages as the sole pricing determinant is obviously improper. That formula specifically measures those costs which are caused by the miles a shipment moves versus those (terminal) costs which are incurred independently of the line-haul movement.

In order to demonstrate further the fallacy of the 1916 relationships, the witness for the Five Company Group has prepared a table showing both line-haul and terminal unit costs for class I railroads in region III for the years 1962-1970.

TABLE 154

Comparison of line-haul and terminal variable costs for class I railroads in official territory (region III) (1962-1970)

Year	Line-haul		Terminal	
	Expense per ton-mile	Index (1962 = 100)	Expense per ton	Index (1962 = 100)
	Cents		*Dollars*	
1962	.584	100.0	1.13	100.0
1963	.566	96.9	1.11	98.2
1964	.549	94.0	1.09	96.5
1965	.529	90.6	1.09	96.5
1966	.542	92.8	1.16	102.7
1967	.556	95.2	1.19	105.3
1968	.570	97.6	1.21	107.1
1969	.588	100.7	1.30	115.0
1970	.598	102.4	1.37	121.2

SOURCES: ICC Rail Carload Cost Scales and Harris' exhibit 8.

Thus, the Five Company Group argues that since the 1916 decision there is even greater justification for proportionally higher rates on long-haul movements than on short-haul movements than would be obtained by a strictly mileage scale of rates.

Table 154 indicates that terminal expenses have increased at a rate that is greatly disproportionate to increases in line-haul costs per weight unit. The line-haul cost per ton-mile in region III for an open hopper car in through train service has only increased 2.4 percent between 1962 and 1970; the terminal cost per ton, however, has increased 21.2 percent during the same period. The per ton cost of handling traffic for short-haul rate groups has increased at a much greater rate than the cost of handling longer haul traffic. If the 1916 level of relativity were allowed to be restored in 1974, the Pittsburgh-Wheeling Group which experiences the more lengthy line-haul movement would subsidize short-haul movements which are more labor and terminal cost intensive.

Rebuttal Statement of Eugene F. Bilz.—Eugene F. Bilz, consultant for Armco Steel Corporation, Inland Steel Company, Republic Steel Corporation, and Youngstown Sheet and Tube Company (Four Steel Companies), takes exception to the testimony for the Five Company Group regarding the relativity of the rail rate levels. Mr. Bilz contends that there is a substantial terminal factor built into the rates prescribed in 1916. To demonstrate this contention, the consultant constructed a regression chart which is shown on the following page as figure 11 in which the rates per ton are plotted against the miles of haul.

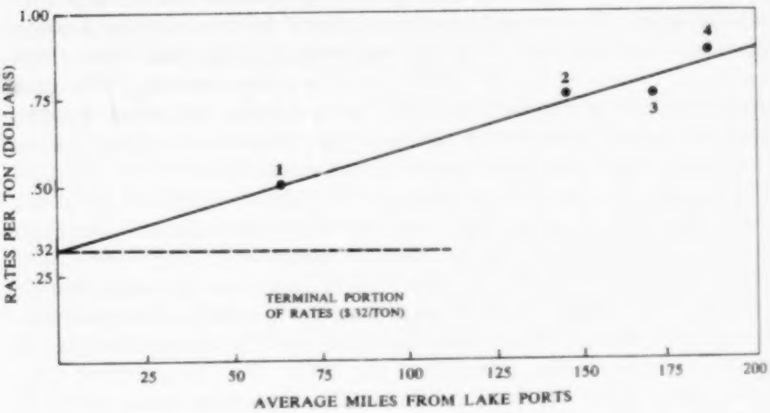
A line of regression was drawn by the least squares method. The analysis shows that a terminal factor equivalent to 32 cents a ton is reflected in the 1916 rates to the points shown. Mileage increments were added to the base to arrive at the rates for the various hauls. The average mileage increment developed from the analysis of the 1916 rate scale is 29 cents per mile.

By reference to figure 11, it can be seen that the terminal factor comprised the predominant portion of the rate to short-haul destinations, Warren and Youngstown. The terminal element of 32 cents comprised 64 percent of the rate of 50 cents per ton prescribed to such points in the 1916 rate scale. On the longer haul of 145 miles to the Pittsburgh-Wheeling Group, the terminal factor comprised 42 percent of the 76-cent rate set in 1916. Therefore, because of the substantial terminal, or nonmileage, factor built into these rates, it is clear that considerations other than mileage entered into construction of the 1916 scale of rates.

FIGURE 11

RATES ON IRON ORE FROM LOWER LAKE PORTS TO POINTS SHOWN,

ESTABLISHED IN ICC DOCKET 6210, 41 I.C.C. 181, (1916)



VALUES	RATE PER TON	AVG. MILES
(1) Warren-Youngstown	$ .50	63
(2) Pittsburgh-Wheeling	.76	145
(3) Donora-Monessen	.76	170
(4) Johnstown	.88	186

SOURCE: V.S. OF W. H. CRAMER APPENDIX H

In his initial Verified Statement No. 13, Mr. Bilz introduced evidence showing the relative cost for ex-lake iron ore movements to various destinations. A detailed description of that study is contained in our analysis of Verified Statement No. 13 which follows herein. In order to provide an indication of the relative costs for ex-lake iron ore movements to the various destination groups, adjusted region II, official territory, costs were used. The use of these costs assumes the same operating characteristics for all movements. However, this was necessary, according to the consultant, in order to measure rates against a uniform cost scale and thereby reflect only differences in lengths of haul. Table 155 below shows the revenue/cost relationships calculated by the Four Steel Companies.

TABLE 155

Revenue/cost relationships computed by Four Steel Companies

Destination group	Miles	Rate per ton[a]	Variable cost per ton[b]	Ratio—rate to cost
				Percent
Warren-Youngstown	63	$2.78	$1.15	242
Pittsburgh-Wheeling	145	3.72	1.59	234
Donora-Monesson	170	3.91	1.72	227
Johnstown	186	4.12	1.81	228

[a] At Ex Parte No. 295 level effective August 1973.

[b] Based on region II costs adjusted to 1973 cost level.

As can be seen from table 155, a variable cost of $1.15 per ton is developed for the 63-mile movement from Warren-Youngstown. This compares with costs ranging from $1.59 to $1.81 to the more distant destinations. Rates at the Ex Parte No. 295 level to Warren-Youngstown are shown to equal 242 percent of variable costs for such movements. This compares with ratios ranging from 228 percent to 234 percent on movements to the more distant destinations. Thus, on the basis of uniform costs to the four destination groups, the rate to Warren-Youngstown provides a relatively higher amount of revenue contribution than is produced by rates to the more distant destinations.

Surrebuttal of Frank S. Harris.—According to the consultant for the Five Company Group, the thrust of the rebuttal argument by the

Four Steel Companies is the assertion that the Commission considered cost factors in the establishment of the rate groups in 41 I.C.C. 181 (1916).

The consultant contends that there is no specific reference to the application of differentials in the relationship between terminal and line-haul costs cited in the 1916 case.

The consultant contends that the regression analysis shown in the Four Steel Companies' rebuttal statement cannot be considered valid. The consultant contends that even if the regression was considered valid, the 32 cents which appears at the "Y" intercept should not be considered the terminal cost. It could be considered the constant or fixed portion of the rate. While the terminal cost could constitute a portion of constant costs, there are many other cost items which contribute to the constant costs.

The consultant contends that the inaccuracy of the technique employed by the consultant for the Four Steel Companies is compounded by the fact that neither the average haul to each rate group nor the line of regression shown reflect a weighting based on the 1916 tonnages to the respective destinations. By relying on regression techniques without such weighting, the conclusions about what the Commission actually prescribed in 1916 are reduced to pure speculation.

With regard to witness Bilz's calculation of the revenue/cost comparison between the short versus long-haul destination groups (Warren-Youngstown vs. Pittsburgh-Wheeling), the consultant for the Five Company Group contends that, even if the witness for the Four Steel Companies had conducted a most exhaustive field study to determine the precise cost of each of the movements involved, the actual cost could easily vary by at least 10 percent from the cost developed in the study, yet a change of less than 4 percent in the adjusted region II territorial average costs which were used to estimate the cost for the Pittsburgh-Wheeling Group traffic would alter this group's rate to variable-cost ratio to 242 percent, identical to the ratio shown for the Warren-Youngstown Group.

The consultant contends the cost analysis prepared by the witness for the Four Steel Companies is in error for the following reasons:

1. Terminal costs have been adjusted to a significantly greater extent than line-haul costs. The line-haul portion of the total cost is overstated by the failure to adjust interchange costs and empty return ratios.

2. The terminal cost adjustments are premised upon numerous assumptions in which even a minor error factor would reverse the results of the analysis.

3. Terminal costs constitute a greater percentage of total cost for short-haul movements (Warren-Youngstown Group) than longer haul movements (Pittsburgh-Wheeling Group).

4. The absolute dollar amount of contributions per ton of iron ore generated by the Pittsburgh-Wheeling Group exceeds the per-ton contribution of the Warren-Youngstown Group by more than 30 percent.

The consultant contends that the witness for the Four Steel Companies had made significantly more adjustments (reductions) to the terminal cost than were done for line-haul costs in order to show that the Warren-Youngstown Group's movement, which is short-haul and terminal cost intensive, would yield a higher revenue contribution ratio than the longer haul movements to the Pittsburgh-Wheeling Group. In the consultant's opinion, had the witness for the Four Steel Companies undertaken a similar in-depth analysis of both the line-haul and terminal costs and made comparable percentage adjustments to both unit costs, the percentage of revenue contribution of the Pittsburgh-Wheeling Group and other long-haul movements would have exceeded the Warren-Youngstown Group's contribution by a substantial margin.

The consultant refers to his comparison (table 154 of this text) which shows that terminal expenses per ton have increased by 21.2 percent over a 9-year period, whereas line-haul expenses per ton-mile have increased only 2.4 percent over the same period. Accordingly, as the disparity between terminal and line-haul expense continues, and the current rate relationship remains constant, it will become more apparent that the long-haul movements are subject to discrimination by across-the-board general increases.

Surrebuttal of the Four Steel Companies (E. F. Bilz).—The consultant for the Four Steel Companies takes issue with the witness for the Five Company Group wherein this witness contends that the cost to the railroads for handling the shorter haul Youngstown traffic has increased at a greater rate than for the longer haul groups. Consultant cites the Five Company Group comparison of relative increases of both line-haul costs and terminal costs for the 9-year period between 1962 and 1970. Consultant concludes that there is no reason to believe expenses for terminal operations increased any more than line-haul expenses. This is because increased costs incurred for wages, fuel, materials, and supplies, and other operating expenses relating to line-haul operations were accompanied by similar increases in such cost items relating to terminal operations. Comparing total dollars of expense, there is no reason to believe that terminal operations incurred any greater increase, percentagewise, than line-haul operations. Consultant contends that the witness for the Five Company Group showed a relatively greater increase in the terminal unit cost primarily because most of the terminal expense is treated on the basis of the number of carloads originated or terminated. With the greatly increased net load experienced by the railroads during the 9 years studied, there has been a reduction in the relative number of carloads and a concommitant increase in the unit cost per carload. While increased net loading reduced the relative number of car-miles operated by the railroads, the car-mile factor does not weigh as heavily in the determination of the line-haul cost as does the carload factor in computing terminal costs.

Thus, such allegedly disparate increases in costs as contended by the Five Company Group are not evident in the rate to variable cost comparisons developed in the rebuttal statement of the consultant for the Four Steel Companies which shows that the rate to the short-haul points provides a greater measure of revenue contribution than is provided to the long-haul points.

Comments.—The consultant for the Five Company Group has utilized 1970 regional average costs updated to the April 1, 1974, level. The consultant has failed to explain his method of updating. While the consultant for the Five Company Group has listed the adjustments to the unit costs, no specifics were included within the exhibit, i.e., underlying working papers were not provided. The consultant merely indicated that certain adjustments were made to the unit costs to more accurately reflect the operations of the issue traffic. However, in most instances, neither the methodology employed in making the adjustments nor the actual amounts involved was shown. The consultant contends that an adjustment was made to station platform expense. This item of expense is not included in the 1971 unit costs. Therefore, it is difficult to understand why they would have to be removed.

Generally, the criticisms made by the consultant for the Five Company Group as to the methods used by the witness for the Four Steel Companies to draw a comparison of the rate to variable cost ratios for the various destination groups are of general nature and consist mostly of conjecture and hypothetical argument. But he has, however, offered no evidence to indicate that his own development of costs is any more accurate.

The consultant for the Five Company Group maintains that the consultant for the Four Steel Companies purposely overadjusted the terminal costs and underadjusted the line-haul costs in order to show that the traffic for the shorter destination group (Warren-Youngstown) was more profitable (percentage contribution above variable costs) than is the traffic for the longer haul detination group (Pittsburgh-Wheeling). We find no substance to this accusation in the data of record. The consultant for the Four Steel Companies explained in detail the adjustments which he made to the carriers' Rail Form A costs and the regional average costs. These adjustments, both with regard to the line-haul and terminal costs, are of the same general nature as those made by the other parties who have submitted verified statements in this proceeding. In regard to the line-haul costs, the following adjustments were made: decreased inter- and intratrain costs (though unsupported); increased tare weight of cars as compared with the regional averages; and increased train weight. These adjustments would tend to lower the cost of service below the regional or system averages. With regard to interchange costs, Mr. Bilz restated this expense on a mileage basis rather than on an actual basis which would increase the cost somewhat. With regard to Mr. Bilz's failure to adjust the empty return ratio, we note that the region III average empty return ratio for open-top hopper cars is 87 percent and that the multiple-car movements under consideration probably have a 100-percent empty return. Thus, any adjustment to the empty-return ratio would increase the line-haul cost rather than decrease it as indicated by Mr. Harris.

The Five Company Group argument regarding the 1916 decision and the rates in existence at that time is without merit. The Four Steel Companies have shown that, for whatever reason, the 1916 rate structure does contain a fixed cost element. Whether this fixed cost is related to terminal costs or some other consideration is unclear, but it is clear that the 1916 rate structure is not entirely mileage oriented.

The Five Company Group's contention that line-haul costs per ton-mile are increasing at a slower pace than have the terminal unit costs (cost per ton) has merit and indicates that the terminal cost at today's level is probably a greater portion of the total rail cost than it was in 1916 thus casting further doubt upon any return to the 1916 rate structure.

VERIFIED STATEMENT NUMBER 11

This verified statement was submitted by the Southern Railway System.

The Southern Railway System (Southern) presented evidence indicating that the rates on iron ore traffic handled on its system are, for the most part, above the variable cost level. Ratios of revenue to variable costs ranged from 94 percent to 142 percent. Of the 14 movements selected for costing purposes, only 2 showed revenue/cost ratios below 100 percent.

Southern states that shipments of iron ore on its line move within a very limited area and from and to relatively few points. Specifically, iron ore handled by Southern was shown to originate from eight States and terminate in seven States. The bulk of Southern's total iron ore traffic (49 percent) originates in Alabama. Other heavy movements originated in Missouri (Pea Ridge) and Tennessee (Copperhill).

Southern states that it handled a total of 18,188 carloads of iron ore in the year 1972 from which 14 representative movements consisting of both single- and multiple-car shipments were selected for study. 1972 was used as the basis for selecting movements since it was latest full year for which statistics were available.

The variable costs for the issue traffic were reportedly based on Southern region Rail Form A average 1972 costs indexed to a September 1973 level. However, on line-haul movements originating at Baltimore, Md., official territory regional average costs indexed to the September 1973 level were used on the portion of the movement from Baltimore to Potomac Yards, Va., and Southern region costs were used for that portion beyond. Western region costs indexed through September 1973 were used on the movement from Pea Ridge, Mo., to Memphis, Tenn., with Southern region costs indexed to September 1973 used for that portion of the movement beyond.

Tare weight and empty-return ratios were reportedly Rail Form A system averages for open-top general service hopper cars. Ownership costs were also from Rail Form A.

Variable costs developed on a carload basis were compared to the average revenues at the Ex Parte No. 295-A level. The ratios of revenue/cost ranged from 94 percent to 142 percent. The ratios for two of the movements were below 100 percent. The ratios developed for the movements between Georgetown, Ga., on the one hand, and Alabama City, Ala., and Thomas, Ala., on the other hand, were 96 percent and 94 percent, respectively. No weighted average costs or revenues were developed for the 14 movements.

Rebuttal statement.—In rebuttal to the evidence submitted by Southern, the consultant (E. F. Bilz) for the Four Steel Companies has taken exception to the development of variable costs for 3 of the 14 movements. Two of the movements were singled out because variable costs for these same movements were included in Mr. Bilz' own Verified Statement No. 13. Both of these movements terminate at Republic Steel's plant at Alabama City and involve import ore transported by rail from Mobile, Ala., and domestic ore originated at Pea Ridge.

The consultant for the Four Steel Companies cites Southern's use of unadjusted territorial average costs in development of variable costs. Southern, they argue, has not made the necessary refinements to reflect actual operating characteristics of multiple-car iron ore traffic.

A comparison of the revenue/cost relationship developed by Southern and the Four Steel Companies is shown below.

TABLE 156

Comparison of rate/cost relationships computed by Southern and Four Steel Companies

From	To	Ratio rate to variable cost	
		Southern	Four Steel Companies
		Percent	*Percent*
Mobile, Ala	Alabama City, Ala	118	136
Pea Ridge, Mo.	do	212	123
Do	do	129	[1]133

[1] Based on mileage revision shown in rebuttal statement of Joseph L. Barnett and surrebuttal of E. F. Bilz.

The most significant adjustment made to the unit costs by the witness for the Four Steel Companies was related to the switching cost at destination. An analysis of the switching factors at destination indicated that the switching of iron ore at the steel plant requires approximately 25 percent of the switching service required on average rail traffic.

The third movement referred to by consultant for the Four Steel Companies refers to a movement from Georgetown, Ga., to Republic Steel's facility at Alabama City, wherein the average load developed was 71.6 net tons per car compared to 67 tons per car shown by Southern in its exhibit. This factor together with the other lower costs developed and explained in Verified Statement No. 13 for iron ore traffic results in a revenue to variable costs ratio higher than that shown by Southern. The revenue/cost ratio shown by Southern for this movement was 96 percent compared to 121 percent developed by the consultant for the Four Steel Companies.

Reply statement of Southern Railway System (Joseph L. Barnett).—The only reply evidence submitted by Southern concerns the movement between Pea Ridge to Alabama City. The 689 miles originally used to cost this movement were reduced to 634 miles. This change resulted in a restated cost per carload of $452.58, which compares with a cost per carload of $482.13 as originally stated.

A witness for Southern states that the methods used to develop the variable costs for the 14 movments were fully explained in Mr. H. B. Barnes original Verified Statement Number 11.

Surrebuttal of Four Steel Companies (E. F. Bilz).—The consultant for the Four Steel Companies adjusted the variable costs for the Pea Ridge to Alabama City movement according to the mileage revision contained in the rebuttal statement of J. L. Barnett. This change resulted in a rate to variable cost ratio of 133 percent as compared to the ratio of 123 percent originally calculated in the consultant's original verified statement. (See table 156.)

Comments.—The cost evidence submitted by Southern for this proceeding contains a minimum amount of explanation.

The variable unit costs for the issue traffic were reportedly based on Southern, official, and Western region 1972 unit costs updated to the September 1973 level of expenses. No indication was given as to the updating procedure used. From the explanation given, we are unable to determine whether the costs are based on *Rail Carload Cost Scales by Territories for the Year 1972* or whether costs were based on an application of the Commission's Rail Form A, *Formula for Use in Determining Rail Freight Service Costs* to the expenses and statistics of carriers assigned to the various cost regions.

The witness for the Four Steel Companies has developed variable costs using more acceptable cost finding techniques than unadjusted regional averages used by the witness for Southern. The variable costs developed by Southern, in our opinion, tend to overstate the costs to Southern of handling a bulk commodity such as iron ore that requires much less handling by the railroad than does average or iron ore usually moves in multiple or trainload shipments. All other submissions in this proceeding recognize the economies of multiple-car shipments. The Four Steel Companies' exception to Southern's use of unadjusted costs is well taken and renders Southern's cost evidence of little if any value.

Table 157 below shows a comparison of the variable cost per car for the 14 movements as developed by Southern and as presented in part I(D)(3). The "m" or "s" symbol on the left-hand side of the page denotes whether the movement was a single-car or a multiple-car shipment. The Coordinator has used 1972 regional costs updated to the year 1973. Regional costs were further adjusted according to transportation characteristics, i.e., single or multiple car, number of interchanges, et cetera.

As can be seen from the exhibit, the Coordinator's cost per car developed for the multiple-car shipments are well below those costs shown for these movements by Southern. The difference in costs for the single-car movements is probably due to different updating procedures and differences in the unit costs used by the Coordinator and those used by Southern.

TABLE 157

Statement showing revenue/cost relationship on carload movements of iron ore handled in open hopper cars between and to points in southern territory

From	To	Average Tons Per Car	Route miles	Route	Average Revenue per car	@Average rail form A variable cost per car indexed through September 1973	
					*	C[1]	Southern Ry.
M Mobile, Ala	Alabama City, Ala	89	325	1	$267.00	$193.13	$227.03
Do	No. Birmingham, Ala	73	266	1	219.00	156.22	188.80
Do	Thomas, Ala	90	268	1	270.00	169.70	201.52
Do	Fairfield, Ala	99	267	2	297.00	202.95	232.37
Do	Woodward, Ala	91	256	1	273.00	165.62	196.64
S. Georgetown, Ga	Alabama City, Ala	67	353	1	210.38	219.76	219.64
Do	Thomas, Ala	68	302	1	187.00	201.96	199.90
S. Rockwood, Ala	Alabama City, Ala	107	172	1	222.56	173.34	164.76
Do	Thomas, Ala	115	116	1	197.80	149.50	138.81
Do	No. Birmingham, Ala	102	112	1	175.44	143.82	133.99
S. Glenwood, Ala	Alabama City, Ala	85	319	1	277.95	249.05	220.94
Do	Thomas, Ala	82	268	1	225.50	226.32	195.93
S. Baltimore, Md	Bristol, Va.-Tenn.	82	682	3	527.79	429.68	440.43
S. Pea Ridge, Mo	Alabama City, Ala	101	689	4	585.00	442.38	452.58

Explanation of Routes:
1—SRS
2—SRS-Ensley, Ala.-BS
3—B&O-Potomac Yard, Va.-SRS
4—MoPac-Memphis, Tenn.-SRS

@—Costs are Southern Region Cost except on haul from Baltimore, Md., to Potomac Yard, Va., cost is for Official Territory, and from Pea Ridge, Mo., to Memphis, Tenn., cost is for Western Region - plus Southern Region costs beyond.

*—At X-295-A level.

[1] Costs developed by the coordinator

VERIFIED STATEMENT NUMBER 12

Verified Statement Number 12 was submitted on behalf of the Upper Lakes Shippers.

The Cleveland Cliffs Iron Company, The Hanna Mining Company, Jones and Laughlin Steel Corporation, Oglebay Norton Company, Pickands Mather Company, Pittsburgh Pacific Company, and Rhude and Fryberger, Inc., hereinafter collectively referred to as the Upper Lakes Shippers or ULS have employed in the services of a transportation consultant (Carl M. Snavely) to conduct a study of the iron ore traffic from the various mine origins to the destinations at upper lake ports.

Six rail carriers, Burlington Northern (BN), Lake Shore and Ishpeming (LS&I), Duluth, Missabe and Iron Range (DM&IR), Chicago and Northwestern (C&NW), Chicago, Milwaukee and St. Paul (Milwaukee), and the Soo Line, handled 62 million tons of iron ore in 1972, or about 20 percent of the total 316.5 million net tons of total carload traffic carried by the six railroads. Of this amount, 54.3 million tons were natural ore (STCC 10 111), pellets (STCC 10 113) and the balance was beneficiating grade (crude) ore (STTCC 10 112).

The ULS 1972 traffic accounted for nearly 60 percent of the natural ore and pellet traffic handled by these six carriers. The ULS traffic totaled 85 percent or more of the iron ore tonnage carried by five of the six railroads.

In 1972, 62 percent of the total iron ore tonnage from ULS origins was shipped on an annual volume basis. The balance of the traffic moved under single-car rates.

Iron ore from the ULS origins is shipped from a relatively small number of origin locations and a substantial portion of the traffic is handled in single-line service. The traffic originates from four ranges. The percent of ULS origin tonnage is shown below for 1972.

TABLE 158

Upper lake shipments by origin range

Range	*Percent of ULS tonnage originated*
	Percent
Mesabi	52.3
Marquette	38.6
Menominee	8.4
Cuyuna	0.7

In general, the upper lakes ore traffic is relatively heavy loading, short-haul traffic. The single-car rated traffic tends to have shorter hauls and lighter loading characteristics than does the annual volume rate traffic. Ore originated on the Marquette Range and shipped to the LS&I docks at Marquette requires a short rail haul while ore originating on the Mesabi and Cuyuna Ranges and shipped to the ports of Duluth and Superior requires a much longer rail haul.

Since the preponderance of traffic originates in the Mesabi range, ULS's cost/revenue study pertains only to that origin region.

ULS states that iron ore traffic on the upper lakes is handled quite differently from general merchandise traffic. For this reason, it is improper to use unadjusted territorial average unit costs to develop the costs of handling a commodity which has uniquely different transportation characteristics than average traffic.

Variable unit costs were developed for the issue traffic by applying Rail Form A, *Formula For Use In Determining Rail Freight Service Cost*, Statement No. 1F1-73, to the 1973 operating statistics for the BN and the DM&IR. The development of unit costs was limited to these two carriers because virtually all of the ULS iron ore from the Mesabi range is transported by them.

Only 9 percent of the total tonnage handled by the BN consists of iron ore, whereas the DM&IR traffic consists of 90 percent iron ore. Thus, the unit cost characteristics of the DM&IR are almost exclusively the result of handling iron ore traffic from the upper lake ranges whereas the unit cost characteristics of the BN reflect the average costs of handling a wide variety of traffic. Operating statistics indicate that, on the average, DM&IR trains contain nearly one-third more cars than those of the BN, weigh one-third more than those of the BN, and are pulled by a lesser number of locomotive units.

To adjust for the difference in operating characteristics between the two railroads, the BN system average unit costs were adjusted to reflect the DM&IR's experience in the following areas:

1. Locomotive units per train.
2. Weight of trains.
3. Switching minutes at origin and destination.
4. Station clerical expense.
5. Train supplies and expenses.
6. Station employees' special service.

With the exception of the car and switching costs related to interchange, the unadjusted unit costs for the BN exceed those of DM&IR in all instances.

The DM&IR adjusted BN unit costs were used to obtain costs for single-car movements from the Mesabi range to Duluth and Superior.

In addition to the adjustments to reflect the experience of the DM&IR, costs were adjusted to reflect the actual operations of the BN for trainload shipments of taconite pellets from Nashwauk, Minn. (Messabi Range) to Superior, Wis. The additional adjustments were obtained from a study of ULS's BN freight waybills for the month of May 1974. Data developed from the waybill study were total gross tons and cars originating at Nashwauk to develop average load per car and total minutes at origin used to develop average origin switching minutes.

Three movements have been selected for the revenue/cost comparison. Two movements are single-car, single-line shipments of natural ore from the Mesabi range to Duluth via the DM&IR and to Superior via the BN. The third comparison is for unit-train shipments of taconite pellets from Nashwauk to Superior via the BN.

The tables below show the revenues and variable costs for these movements:

TABLE 159

Single-line shipments of natural ore from the Mesabi range to Duluth and Superior single-car shipments .

	BN to Superior	DM&IR to Duluth
1. Rate per ton, Sept. 1, 1973	$2.26	$2.26
2. Variable cost per gross ton	1.85	1.13
3. Ratio rate to variable cost	1.22	2.00

TABLE 160

Revenue-cost comparison, unit-train shipments of pellets, Nashwauk, Minn., to Superior, Wis., via the BN

1. Rate per gross ton	$1.70
2. Variable cost per gross ton	0.92
3. Ratio rate to variable cost	1.85

Rebuttal statement of the Burlington Northern Railroad (L. L. Van Zinderan).—In rebuttal to the evidence submitted by the ULS, the witness for the BN has taken exception to the ULS' development of variable costs for the issue traffic. Specifically, the BN contends that the ULS erroneously substituted certain DM&IR operating characteristics for those of the BN.

A witness for the BN restated the costs developed by the ULS by an application of Rail Form A, *Formula For Use in Determining Rail Freight Service Costs,* to the 1973 operating statistics of the BN.

1. Cost of capital. The ULS employed that DM&IR's rate of return on net investment at 8.61 percent, while the BN's actual cost of capital is 11.5 percent.

2. A witness for the ULS did not use the proper operational factors in the development of the variable costs for single-car shipments of natural ore to Duluth and Superior.

a. *Train size.*—The ULS used a 5,032-ton train for natural ore while the actual tonnage for BN trains for the issue traffic consists of 11,250 trailing tons on the average.

b. *Car ownership costs.*—The ULS adjusted the BN's system average car ownership costs to reflect the average utilization of natural iron ore cars and their respective values by using the BN 's average per diem and mileage rates on iron ore hopper cars. The BN further adjusted the per diem portion for ore car utilization.

c. *Diesel units required.*—The BN substituted two diesel units for the 2.125 units employed by the ULS.

d. *Station clerical costs.*—The BN costs rather than the DM&IR, station clerical costs were used. The cost was adjusted for trainload billing.

3. Exception was also taken to the operational factors applied to the transportation of trainload shipments of taconite pellets from Nashwauk to Superior. Adjustments were made to the following items:

a. The BN substituted 186.2 loaded cars per train for the 188 used by the ULS.

b. Three diesel units were substituted for the 3.5 units used by the ULS.

c. The ULS utilized 11,897 tons per train while the BN used 12,013.

d. The ULS utilized 1-day turnaround time per trip including terminal time for freight train car costs. The BN contends that in order to transport a minimum shipment size trainload, 1.5 extra trains per week are required. This necessitates use of an additional one-half day for car costs.

e. Station clerical costs. The BN substituted BN station clerical costs adjusted for multiple-car and/or trainload shipments.

A witness for the BN has shown that the rates for iron ore movements from the ULS are compensatory to the carriers, but not by as great a margin as shown by the witness for the ULS.

The ratios of revenue to variable costs developed by the BN for the natural iron ore and taconite pellets compared to the ratios developed by the ULS are shown below:

TABLE 161

Revenue/cost comparison, natural ore and taconite traffic Burlington Northern results compared to ratios developed by the Upper Lake Shippers (per gross ton)

	Single-car shipments			Unit trains	
	Natural iron ore			Taconite pellets	
	Mesabi range to Duluth & Superior			Nashwauk to Superior via BN	
	ULS		BN	ULS	BN
	BN to Superior	DM&IR to Duluth	To Duluth & Superior		
Rate per gross ton September 1, 1973	$2.26	$2.26	$2.26	$1.70	$1.70
Variable cost per gross ton, 1973----	$1.85	$1.13	$1.44	$0.92	$1.20
Ratio rate to variable cost-------	1.22	2.00	1.57	1.85	1.67

Comments.—The Rail Form A's cited by both parties to this proceeding have not been made a part of the record; however, both parties accept and use the same unit costs. Therefore, this evidence is accepted as presented.

Both parties have made adjustments to the Rail Form A costs in order to reflect the transportation characteristics of iron ore. However, the costs developed by the ULS for the BN are not as acceptable as those developed by the BN from its own data. Although the traffic handled by the DM&IR consists primarily of iron ore traffic from the upper lake region, there is little value in using that data when actual BN experience is introduced. The variable costs as developed by the BN are more representative for movements by the BN. The costs as submitted by ULS for movement via DM&IR from the Mesabi range to Duluth are acceptable for DM&IR.

In general, the unit costs calculated from Rail Form A appear reasonable and are accepted by both parties. The application of those costs depends on the validity of the operational factors to which they were applied. The special studies from which the operational factors were derived are only briefly explained and cannot be validated. The adjustments, however, generally appear reasonable with the exception of the use of DM&IR factors for BN operations.

VERIFIED STATEMENT NUMBER 13

Verified Statement Number 13 was submitted on behalf of the Four Steel Companies.

The Four Steel Companies employed the services of a transportation consultant (E. F. Bilz) to develop the average revenue to variable cost ratios for all of the 1973 iron ore tonnage from the various points of origin to the facilities of the Four Steel Companies. Such tonnage consists of ex-lake iron ore transloaded from ore boats to railcars at lake ports in Ohio, foreign ore moving through various ports of entry, and ore moving exclusively by rail.

Ex-lake iron ore originates in the United States and Canada and is transloaded from the mines to upper lake and Canadian ports for loading in lake vessels. The iron ore is transported by the lake vessel to Lake Erie ports in Ohio for further movement by rail to the steel plants. The ex-lake iron ore accounted for more than 79 percent of the total rail movement of iron ore to the Four Steel Companies in the year 1973.

Imported ore accounted for less than 9 percent of the total rail movement to the Four Steel Companies. The majority of this traffic moved through the port of Mobile to Republic Steel's plant at Alabama City.

Iron ore moving in all rail service originates from mines in Wisconsin, Missouri, and Tennessee. This traffic comprised approximately 12 percent of the total 1973 traffic of the Four Steel Companies.

Rates charged by the railroads for the transportation of iron ore to the plants of the Four Steel Companies fall into several categories generally separated according to minimum weight. The minimum weight categories include shipments of 10,000 gross tons; shipments of 5,000 gross tons; shipments of 1,500 gross tons; shipments of 15 cars with a minimum of 200,000 pounds per car; shipments of 1,800 net tons; shipments of 360 net tons; and single-car shipments.

Shipments of 5,000 gross tons or more comprise 75 percent of the total iron ore tonnage.

Approximately 95 percent of the iron ore tonnage transported by rail to the Four Steel Companies in 1973 moved at rates which specified the tender of minimum weight shipments. Single-car movements which move at a substantially higher rate account for the other 5 percent of this traffic and consist primarily of import iron ore.

Eighty-two percent of the iron ore tonnage to the Four Steel Companies for 1973 moved wholly within the Eastern District. Table 162 below shows the rail iron ore tonnage separately by territories.

TABLE 162

Routine of iron ore shipments to Four Steel Companies

Movement	Gross tons in 1973	Percent of total
Within eastern district	10,237,872	82
Within southern district	880,610	7
Within western district	1,170,754	9
West to East	568,877	1
West to South	99,586	1
Total	12,445,697	100

Table 163 below summarizes the average length of rail haul to the Four Steel Companies.

TABLE 163

Average length of haul to the Four Steel Companies

	Gross tons	Gross ton-miles (000)	Average miles of haul
All movements to plants at Ashland, Ky., Buffalo, NY, Cleveland, Hamilton, Middletown, Warren, and Youngstown, Ohio.	10,294,749	1,793,000	174
Movements to Alabama City, Ala	980,196	352,553	360
Movements to E. Chicago, Ind	955,775	289,504	303
Movements to Houston, Tex	214,979	160,589	747
Grand total	12,445,699	2,595,936	209

Single-line traffic accounted for 59 percent of the total tonnage in 1973 and interline traffic accounted for 41 percent. The interline traffic involved no more than two carriers participating in the movements.

Development of rail unit costs

A. *Rail Form A.*—Fifteen carriers are involved in the issue traffic. Individual Rail Form A's were prepared for the six carriers which transported the majority of the traffic: B&O, C&O, EL, N&W, PC, and the L&N. Rail Form A's for the B&O and PC are based on operations for the year 1972, adjusted to the 1973 wage and price level by the method outlined in Commission Statement No. 2-58, *Rail Carload Cost Scales by Territories as of January 1, 1958.* Costs for the C&O, EL, L&N, and N&W were derived from Rail Form A applications to operations in the year 1973.

Unit costs for the remaining carriers were developed on the basis of unit costs in the respective cost regions to which the railroads are assigned. 1971 unit costs from the Commission's cost scales were updated to the 1973 wage and price levels by the use of Commission Statement No. 2-58, *supra.*

B. Adjustments to unit costs.—Adjustments to the system or territorial average costs were made based on actual operating conditions in the transportation of iron ore. Specifically, adjustments were made to the following items:

1. Train weights.
2. Switching at origin or destination.
3. Freight train car expense at origin or destination.
4. Station clerical expense.
5. Special services expense.
6. Inter-, intratrain switching expense.
7. Interchange switching expense.

A discussion of the special studies used for these adjustments follows.

1. *Train Weight Adjustment*

The train weight adjustment was based on information derived from operating personnel at representative lower lake ports and by personal inspection of these facilities by the consultant performing the study. The dock origins used for this study consisted of six docksites that handled iron ore destined to three of the four steel companies involved. An average train weight of 8,242 net (2,000 pounds) tons was developed. Running costs for movements other than ex-lake were based on the carrier or regional average weight train.

2. *Switching at origin or destination*

a. Origin switching.—Origin switching minutes per loaded car at lake points were determined by a study of five of the six lower lake docks used in developing the train weight adjustment. The information was compiled by a combination of an inspection of the switching operations by the consultant performing the cost study and by information supplied by dock operating personnel. The average switching time at the docks varied from 5.71 minutes to 7.85 minutes per loaded car. The average time on a weighted basis for dock origin switching was 6.63 minutes per loaded car. The 6.63 minutes per car average is employed in the cost study in developing the rail costs for switching at the lake docks. The switching study includes the elements of switching time for transfer service and train makeup and break-up service.

Origin switching for C&NW at Black River Falls, Wis., of 2.3 minutes per car, which includes 15 percent allowance, is less time consuming than at most other origins since the C&NW merely sets the cars out at an interchange track requiring 60 minutes for an average cut of 30 cars. Origin switching at all other points of 7.0 minutes per car was developed from data for those points where specific data was available.

b. *Destination switching.*—Destination switching minutes per loaded car were determined also by a combination of an inspection of the switching operations by the witness for the Four Steel Companies and by information from operating personnel of the Four Steel Companies. Studies were made at all destinations for the Four Steel Companies except the Republic Steel plant at Buffalo, N.Y. Destination switching minutes were aggregated for all of the plants to produce the following weighted average switching time per car for each service: Industry switching—2.67 minutes per carload; transfer switching—1.38 minutes per carload. Classification time of 2.0 minutes was added to these figures to produce a total switching time of 6.05 minutes. An allowance of 15 percent for nonproductive time was added to the 6.05 minutes giving a total of 6.96 minutes per loaded car. Destination switching was further adjusted to 7.15 minutes per car by excluding Republic Steel's plant at Alabama City. At the latter facility costs are based on an average of 4.81 minutes per loaded car.

3. *Freight train car expense*

a. *Origin.*—Origin freight train car expenses reflect the Rail Form A average of 4 days at origin except for one movement: In computing costs for movements from Black River Falls, Wis., via the C&NW to Inland Steel's facility at East Chicago, Ind., freight train car expenses were adjusted to reflect car detention of 1 day. This adjustment is made because of the efficient use of the equipment for this operation. Carloads of iron ore are transported between these two points in a regularly scheduled 3-day cycle. In the estimation of the consultant performing the cost study, the 1 day allowed at origin for car detention is more than justified. The average days thus developed at origin were then multipled by the system or regional average car (all types) ownership costs per day.

b. *Destination.*—Rail Form A average freight train car expense at destination is based on an average of 4 days' detention. This time is made up of 2 days for switching loaded and empty cars between the rail yard and the plant and 2 days for unloading. This average destination terminal detention time was adjusted to 3.1 days per car consisting of 1 day for switching the loaded car, 1.1 days for unloading at industry and 1 day for switching the outbound empties. The 3.1 days were based on a 1967 study conducted in connection with movements of iron ore for Republic Steel and Youngstown Sheet and Tube Company.

The average days at destination were multiplied by the system or regional average cost (all types of cars) per day.

4. *Special services* expense was removed entirely from the costs since the elements of special service are performed by personnel of the involved steel mills rather than by railroad employees.

5. *Station Clerical Expense*

The predominant portion of Rail Form A station clerical expense is associated with work performed by station and general office employees engaged in the preparation of origin waybills, interline abstracts, et cetera. Since iron ore moves predominantely in trainloads or multiple-car shipments, the rail clerical costs are held to a minimum. In accordance with the economies associated with the trainload and multiple-car shipments, the station clerical expense was reduced. The adjustment to this item of expense treats 50 percent related to the shipment and 50 percent related to the car. Averages developed for the Four Steel Companies are as follows: shipments of ex-lake, import, and all-rail ore to plants in Ohio, Ashland, Ky., and Buffalo, N.Y., are based on 65 cars; shipments to Inland's plant at East Chicago—30 cars; shipments to Alabama City—16 cars; shipments to Houston, Tex.—15 cars. Adjustments were made by adding to the carload portion of the expense (50 percent of the total) the shipment portion expressed as a cost per carload based on these average number of cars in the shipment.

6. *Inter-Intratrain switching expense*

Since iron ore shipments are generally assembled in trainload quantities or large multiple-car shipments, there is little need for additional switching from origin en route to destination. To adjust for the reduced amount of inter-, intratrain switching, a factor of 25.47 percent was applied to the system or territorial average inter-intratrain switching cost per car-mile. The consultant states that this percentage is derived from the Commission's 1969 Burden Study and reflects the relationship of the switching required on coal and iron ore traffic compared with total traffic carried by railroads in official territory. No adjustment of the freight train car expense of inter- intratrain switching expense is made in the study.

7. *Interchange switching*

Since 59 percent of the iron ore traffic transported to the Four Steel Companies in 1973 moved in single-line service and the balance in interline service requiring only one interchange, the system average interchange costs were reduced by the same 25.47 percent factor used to adjust the inter- intratrain switching. The freight train car expense portion of interchange expenses (expenses other than switching costs) is based on the system or territorial average costs.

C. *Revenue/cost comparisons.*—Variable costs developed in the study for rail movements of iron ore in 1973 to the plants of the Four Steel Companies are compared to the total rail freight charges paid by these companies in table 164 below:

TABLE 164

Comparison of rail revenue with variable expense for movements of iron ore to steel plants of Armco, Inland, Republic, and Youngstown. Revenue and costs based on operations in 1973

Item	Amount
Gross tons of iron ore (tons of 2,240 pounds)	12,445,699
Total rail freight revenue from iron ore shipments	42,010,673
Total variable expense	24,078,198
Revenue contribution made by iron ore	17,932,475
Ratio—revenue to variable expense———percent	17

Source: Tons and Freight Revenue from Traffic Study—Year 1973.

The rail revenues for the issue traffic to the Four Steel Companies exceeded variable expenses by 74 percent and provided $18 million in revenue contribution to the rail carriers' overhead burden.

The $42 million revenue paid by the Four Steel Companies reflects an average of the following rate levels: Ex Parte No. 281 until August 19, 1973, Ex Parte No. 295 until October 1, 1973, and Ex Parte No. 299 for the balance of the year.

In addition to revenues and variable costs developed for the year 1973, a pro forma development of 1974 revenues and variable costs was shown.

Revenues for 1973 were increased by 23 percent to give effect to the X-301, 303, and 305 rate increases for the year 1974. Variable costs for 1973 were updated by a factor of 12 percent by the use of the method shown in Statement No. 2-58, *supra.*

The results show a revenue to cost ratio for 1974 of 193 percent as shown below:

TABLE 165

Pro forma development of 1974 revenues and costs

Item	Amount
Gross tons of iron ore (2,240 pounds)	12,445,699
Total rail freight revenue (X-305A level)	$51,673,128
Total variable expense (4/74 level)	26,726,800
Revenue contribution made by iron ore	$24,946,328
Ratio—revenue to variable expense (percent)	193

Rebuttal statement of the Missouri Pacific RR. (H. S. Rawert)

A. *General.*—The Missouri Pacific's rebuttal of the evidence submitted by the Four Steel Companies is concerned solely with movements from Pea Ridge to Armco's plant at Houston via the Missouri Pacific Railroad (MoPac) and the Texas and Pacific Railroad (TP). This movement covers only 1.7 percent of the total traffic of the Four Steel Companies.

B. *Rebuttal of cost evidence.*—MoPac witness, H. S. Rawert, takes issue with the evidence submitted by the Four Steel Companies as follows:

1. *Destination switching*

The MoPac developed a total of 35.46 switching minutes per loaded car at Armco's plant at Houston. This compares with 7.15

average minutes per loaded car developed for destination of all Four Steel Companies.

2. *Number of interchanges*

The MoPac contends that the witness of the Four Steel Companies is in error by contending that all movements other than single-line movements moved on no more than two carriers. The MoPac points out the Pea Ridge-Houston move involves four interchanges.

3. *Minimum weights*

The witness for the MoPac contends that the rates for the movement from Pea Ridge to Houston have a minimum weight requirement of 1,340 gross tons per shipment rather than 1,500 gross tons as contended by the consultant for the Four Steel Companies.

4. *Average haul*

The MoPac contends that the mileage between Pea Ridge and Houston is 779.4 miles rather than 747 miles as shown by the evidence submitted for the Four Steel Companies.

5. *Tare weight*

The evidence of the Four Steel Companies shows an average tare weight of 25.7 tons for the traffic at issue rather than the actual 28.4 tons.

6. *Average load*

The cars assigned to the service between Pea Ridge and Houston are almost exclusively cars of 100-ton capacity. Thus, the variable costs are understated by the use of the territorial average load used by the Four Steel Companies.

C. *Revenue/Cost Comparison.*—MoPac shows a revenue-to-variable cost comparison of 121 percent for the Pea Ridge to Houston traffic for January 1, 1973, and a ratio of 124 percent for August 19, 1973. This compares to the Four Steel Companies' ratio of 174 percent.

Surrebuttal of Eugene F. Bilz to the statement of H. S. Rawert, MoPac.—The consultant for the Four Steel Companies takes exception to H. S. Rawert's testimony which draws a distinction between the compensatory level of iron ore traffic transported by the MoPac and TP from Pea Ridge to Houston separate and apart from total iron ore traffic to the Four Steel Companies, for which the rate to variable cost ratio of 174 percent is developed by Mr. Bilz.

Mr. Bilz reiterates that his study dealt with the transportation of 12 1/2 million tons of iron ore in 1973 that reflected movements from many origin points, via many different railroads to 12 separate plants operated by the Four Steel Companies. Mr. Rawert's testimony, on the other hand, is concerned with only Pea Ridge-Houston iron ore which amounted to 215,000 gross tons in 1973, or only 1.7 percent of the total tonnage for which costs were developed in Mr. Bilz's study. Obviously, each and every separate movement of iron ore does not provide revenues which equal 174 percent of variable costs. However, in the aggregate, the 12 1/2 million tons of iron ore that moved to the Four Steel Companies in 1973 produced that level of revenues.

The consultant for the Four Steel Companies argues that his study shows a rate to variable cost ratio of 136 percent for the Pea Ridge-Houston movement which is somewhat higher than the ratios of 121 and 124 percent shown by the witness for MoPac.

Below is a discussion of the reasons for this difference in cost.

1. *Lading weight.*

The witness for the MoPac states that the tariff publication requires a 15-car minimum with 89.3 gross tons (100 net tons) per car. Costs for all of Armco Steel plants, including the Houston plant are developed by Mr. Bilz on the basis of an average of 83.70 net tons per car. The 83.70 net ton figure is a weighted average based on tonnage transported to Armco's four steel plants and includes an average of 102.5 net tons per car for the Houston plant. Thus, if costs for the movement via MoPac-TP to Houston are singled out, the costs should be based on 102.5 net tons which would lower the variable cost per ton as developed by Mr. Bilz by 18 percent.

2. *Destination switching*

The consultant for the Four Steel Companies takes issue with the destination switching minutes of 35.46 per loaded car developed by the MoPac for Armco's plant at Houston. The consultant for the Four Steel Companies stated that 14.51 minutes switching per loaded car was developed for Armco's Houston plant in his development of the average destination switching time of 7.15 minutes (excluding Alabama City) for the 11 plants of the Four Steel Companies. According to the consultant, the 35.46 minutes developed by the MoPac was derived from a study introduced by the railroads in I. & S. No. 8863, *Switching and Minimum Carload*

Charges, Houston, Texas, decided January 23, 1975 (not printed), which represents switching for *all* traffic and is not representative of iron ore switching to Armco's plant which requires much less switching time. Therefore, the 14.51 switching minutes per loaded car developed for switching iron ore traffic at Houston provide an ample allowance for the actual service performed.

3. *Interchange Expense.*

The consultant for the Four Steel Companies takes issue with the MoPac's contention that the iron ore traffic from Pea Ridge to Houston requires four interchanges. The interchanges cited by the witness for the MoPac include one interchange from the MoPac to the TP, another from the TP back to the MoPac, one from the MoPac to the switching line (HB&T) at Houston and one interchange between HB&T and the Port Terminal Railroad Association at Houston. Interchange costs are not applicable to any of the movements on or between the switching lines since they are all included in the destination switching at Houston. Also, there is little if any switching involved in the "family line" interchange between the MoPac and the TP. Consultant cites docket No. 34472, *Sea-Land Service, Inc.* v. *Baltimore & O. R. Co.*, 326 I.C.C. 708 (1966), wherein the Commission declared that interchange time between these two railroads is minimal because only the crews are changed.

In conclusion, consultant for the Four Steel Companies alleges that if he had employed the operating factors herein discussed, i.e., destination switching time of 14.51 minutes per loaded car, shipments of 15 cars with a net load of 102.5 net tons per car, and a haul of 779 miles, a rate to variable cost ratio of 136 percent for the Pea Ridge to Houston movement would have been obtained.

Comments.—The evidence submitted by both parties indicates that the revenues cover the variable expense by a wide margin. The revenue/cost relationship of 121 percent and 124 percent developed by the MoPac relates only to the movement of iron ore from Pea Ridge, Missouri to Houston, Tex., which accounts for only 1.7 percent of the Four Steel Companies' total traffic, whereas the 174 percent revenue/cost relationship shown by the Four Steel Companies is a ratio developed for the traffic to all of the destination steel plants of the Four Steel Companies. MoPac does not take exception to the overall average study results of the Four Steel Companies but only as to the representativeness of those results to the movement from Pea Ridge to the Armco plant at Houston.

The original evidence submitted by the Four Steel Companies shows a variable cost of $5.28 per gross ton for the movement between Pea Ridge and Houston. This contrasts with the cost per gross ton of $5.48 as developed by MoPac. Comparing the $5.28 variable cost per gross ton shown by the Four Steel Companies to the MoPac's rate per gross ton for this movement of $6.62 as of January 1, 1973, and $6.82 as of August 19, 1973, produces revenue to variable cost ratios of 125 percent and 129 percent, respectively, which compares with MoPac's ratios of 121 percent and 124 percent for the same two periods.

We are unable to verify the contention made by the consultant for the Four Steel Companies that the rate to variable cost ratio would be 136 percent based on actual operating factors for the Pea Ridge-Houston movement since there is not enough cost data in the statement to develop this cost.

The witness for the Four Steel Companies in making the station clerical adjusted assumed 50 percent of the costs is associated with the shipment and 50 percent associated with the carloads. The Commission's procedure assumes that 75 percent of the cost is related to the carload portion of the expenses and 25 percent related to the number of cars per shipment. However, the resulting difference in cost occasioned by the use of the latter method makes little difference to the resulting variable cost.

Consultant for the Four Steel Companies has also erred in reducing interchange and inter- intratrain switching to 25.47 percent of the territorial average for the eastern district. The 25.47-percent reduction referred to was in adjustment for origin and destination switching for iron ore in the 1969 Burden Study.

The Four Steel Companies' witness is correct regarding the number of interchanges. A full interchange usually does not occur when interchange switching is performed between so called family lines (MoPac and TP). The switching between the HB&T, Port Terminal Railroad at Houston could reasonably be considered part of the destination switching cost unless more supporting evidence to the contrary was offered.

The revenue/cost relationships developed by the Four Steel Companies appear reasonable.

SUMMARY OF FINDINGS AND CONCLUSIONS

The movements selected by the parties that submitted cost evidence to this proceeding generally showed higher revenue to variable cost ratios for the iron ore traffic on a simple average basis than the 254 movements considered in part I(D)(3). We have made some comparisons of the revenue to cost ratios described in the preceding analysis and the ratios presented in the earlier section. It should be noted that these comparisons are of a general nature and for the most part only simple averages are used. The comparisons are generally as follows:

Verified Statement No. 3 submitted on behalf of the National Steel Corporation shows a revenue to variable cost ratio at 240.3 percent for unit-train traffic moving between Cleveland and Weirton. This compares to a simple average ratio of 202 percent developed for trainload movements of iron ore moving within official territory based on a tabulation of the ratios for 50 movements in unit trains. No rebuttal evidence was received to this initial statement.

Verified Statement No. 4 submitted on behalf of Alan Wood Steel Company shows a revenue to variable cost ratio of 258 percent on a combined weighted average for the Penn Central and the Reading Railroad for movements of iron ore in unit trains from the Port of Philadelphia to Swedeland. This compares to the simple average ratio of 202 percent developed for 50 movements of iron ore in unit trains moving within official territory. However, the study data submitted by Alan Wood Steel Company do not meet the evidentiary requirement established by the Commission's order in Ex Parte No. 270, dated December 27, 1973, that the revenues and costs be at the September 1973 level, whereas Alan Wood Steel Company's study is at the 1974 level. No rebuttal statements were received to this initial statement.

Verified Statement No. 10 was submitted on behalf of the Five Company Group. Seven selected movements moving by unit trains within the official territory (ex-lake traffic terminating in Ohio and Pennsylvania) show a weighted revenue to variable cost ratio of 184 percent. The Five Company Group's method of cost computation was not fully explained. The ratio of 184 percent developed for seven movements shown by them compares to the development of the revenue to variable cost showing of 202 percent on a simple average basis for unit-train traffic moving within the official territory. A rebuttal statement was submitted by the Four Steel Companies for ex-lake iron ore which showed a simple average revenue to variable cost of 233 percent for four movements.

Verified Statement No. 11 submitted by Southern showed a simple average ratio of revenue to variable cost of 128 percent for five

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multiple-car movements moving intrastate within the State of Alabama. The Coordinator's analysis of multiple-car traffic for the Southern region based on the same five iron ore movements developed a ratio of 150 percent on a simple average basis.

Revenue to variable cost ratios developed by Southern for iron ore traffic from Georgia to Alabama showed a simple average ratio of 95 percent for single-car shipments. This compares with a simple average ratio of 94 percent developed by the Coordinator for the same movements. In a rebuttal statement to the Southern's initial statement, the Four Steel Companies obtained ratios similar to those of Southern except in one instance for a movement between Georgetown, Ga., to Alabama City. For this movement, the Southern calculated a ratio of revenue to variable cost of 96 percent compared with 121 percent obtained by the Four Steel Companies.

Southern showed a simple average ratio of 121 percent for two single-car movements; one from Pea Ridge to Alabama City and one from Baltimore, Md., to Bristol, Va., and Bristol, Tenn. This compares to a simple average ratio of revenue to variable cost of 104 percent for Western region-Southern region, and official territory-Southern region combined developed by the Coordinator.

Southern showed a ratio of revenue to variable costs of 130 percent for five single-car movements within the State of Alabama. The Coordinator's analysis of the same five movements developed a simple average ratio of 119 percent.

Verified Statement No. 12 submitted on behalf of several mining companies referred to as the Upper Lake Shippers showed a simple average revenue to cost ratio of 169 percent for unit-train movements originating from the Mesabi range destined for various lake ports. This compares to a simple average ratio developed by the Coordinator for unit trains for the western district of 129 percent based on 41 movements. In a rebuttal statement submitted by the Burlington Northern Railroad, the revenue to cost ratio for single-car movements from the Mesabi range to Duluth and Superior was 157 percent compared with the ULS's ratio of 122 percent. The Burlington Northern also calculated a revenue to cost ratio of 167 percent compared to a ratio of 185 percent calculated by the ULS for unit-train movements from Nashwauk to Superior. Due to serious infirmities in the method of cost calculation by the ULS, the evidence submitted by the Burlington Northern is considered the more reliable of the two.

Verified Statement No. 13 submitted on behalf of the Four Steel Companies showed a weighted average revenue to variable cost ratio of 174 percent. The costs developed for this statement included all traffic for the year 1973 to the facilities of the four companies. This roughly compares to a combined simple average ratio of 185 percent developed by the Coordinator based on 90 movements consisting of both multiple-car and unit-train movements. A rebuttal statement was submitted by MoPac which show a revenue to cost ratio of 121 percent for multiple-car shipments from Pea Ridge to Armco's plant at Houston. The MoPac cost evidence contained certain deficiencies which tended to overstate the costs for this movement. However, this particular movement is of little significance since it only represented 1.7 percent of the total traffic received by the Four Steel Companies. We found the methods used by the Four Steel Companies generally acceptable in developing an overall revenue to variable cost ratio for traffic moving to various facilities of the four companies.

Although we have taken exception, for various reasons, to the cost and revenue studies submitted by certain parties to this proceeding, the results of those studies. nevertheless, support the conclusion reached by our own computations of rate to variable cost ratios previously furnished, namely, that the iron ore rates are generally compensatory, i.e., they exceed their variable costs. The simple average rate to variable cost ratio for the total single-car iron ore shipment was 89 percent. For multiple-car iron ore shipments, the simple average rate to variable cost ratio was 147 percent, whereas for trainload shipments of iron ore, the simple average rate to variable cost ratio was 169 percent.

Part I(D)(5): Revenue/mileage scatter charts

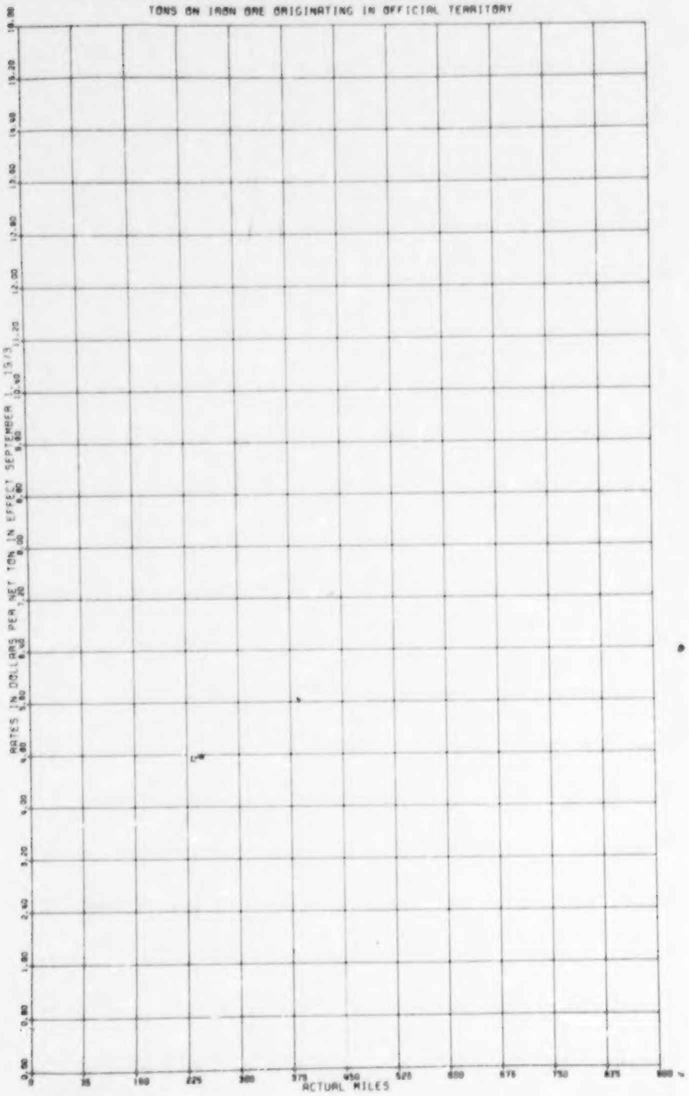
The 13 scatter charts presented in this section (figures 12-24) are designed to serve a number of functions. First, they allow visual comparisons to be made of similar types of iron ore traffic with regard to the relationship of rate and actual miles moved. Second, the groupings utilized in these charts, whenever possible, are similar to groupings utilized in the scatter charts presented in part I(D)(5) of Ex Parte No. 270 (Sub-No. 6). Thus the rate/mileage relationship between iron ores and scrap iron and steel may be compared. Third, the charts have been marked in order to bring attention to the individual rates found to return revenues below 100 percent of variable cost and the rates found to return revenues in excess of 230 percent of variable cost. This notation will help to assess the effects that could be made in the freight rate structure if the Coordinator's recommendations are adopted by the Commission.

The raw data for these charts was taken from the information provided in part I(D)(3). All representative movements under 900 miles have been included.

In order to prevent misinterpretation of these charts, a few points should be noted. While there is a definite correlation between rate and actual miles moved in almost all of the charts, this correlation is not "pure." That is, a well-defined increase in rates will not be found for every increase in mileage. There are many reasons for the absence of a pure rate/mileage relationship. First, many rates are made on the basis of short-line distances. If, for example, the short-line distance between point A and point B is 50 miles the rate will always be the same for the movement notwithstanding the fact that the traffic, on different occasions, may move to point B over a number of routes with differing mileages. Second, while the per-car tonnage for each of the plotted movements in a given chart is similar, there may be differences in the number of switching movements or other services required that would account for differences in the line-haul rate. Thus, a pure rate/mileage correlation should not be expected.

FIGURE 12

REPRESENTATIVE SINGLE CAR RATES ON ACTUAL CARLOADINGS BETWEEN 50 & 65 NET TONS ON IRON ORE ORIGINATING IN OFFICIAL TERRITORY



L = Rate returning revenue below 100 percent of variable cost

FIGURE 13

REPRESENTATIVE SINGLE CAR RATES ON ACTUAL CARLOADINGS BETWEEN 65 AND 125 NET TONS ON IRON ORE ORIGINATING IN OFFICIAL TERRITORY

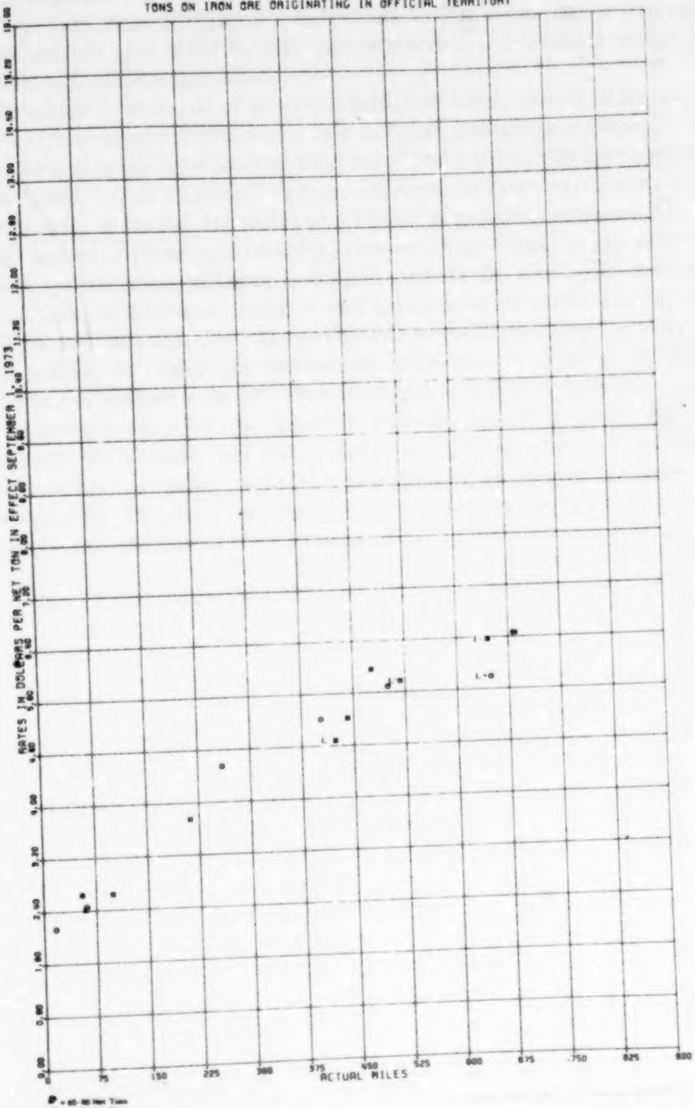


FIGURE 14

REPRESENTATIVE MULTIPLE CAR RATES ON ACTUAL CAR LOADINGS BETWEEN 35 AND 110 NET TONS ON IRON ORE ORIGINATING IN OFFICIAL TERRITORY

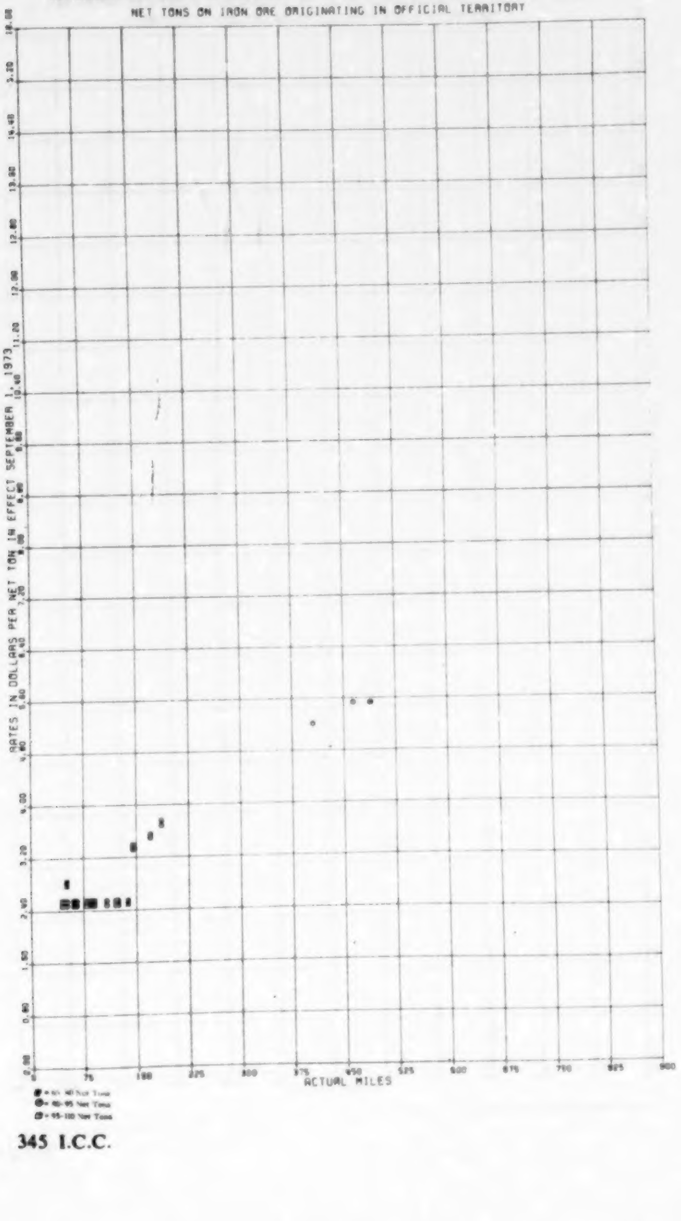
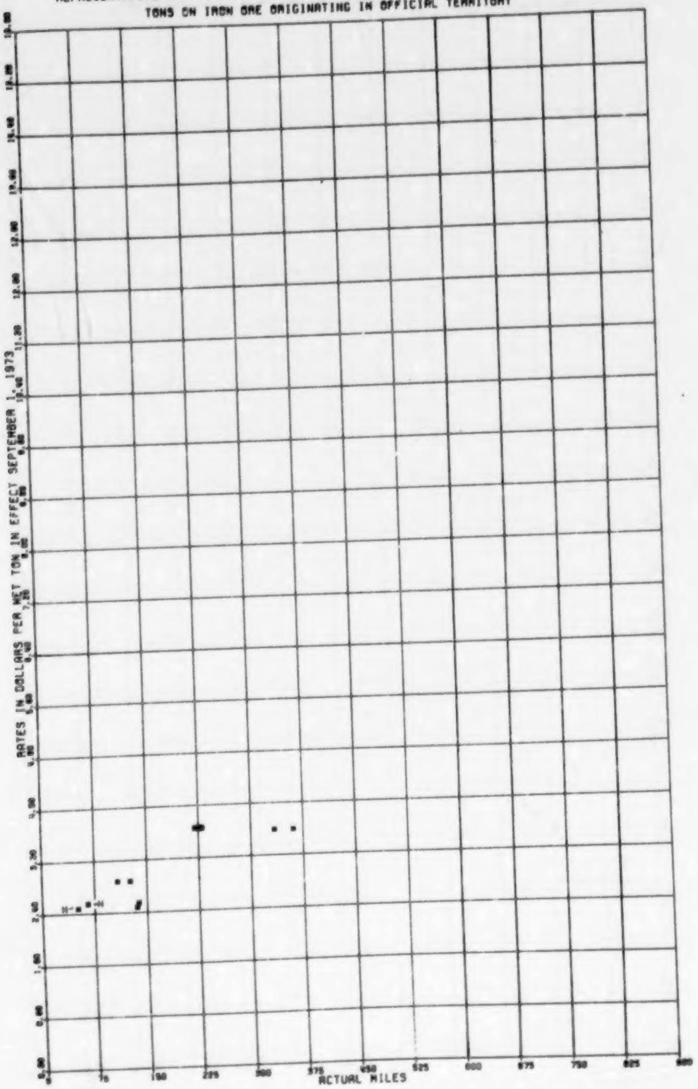


FIGURE [illegible]

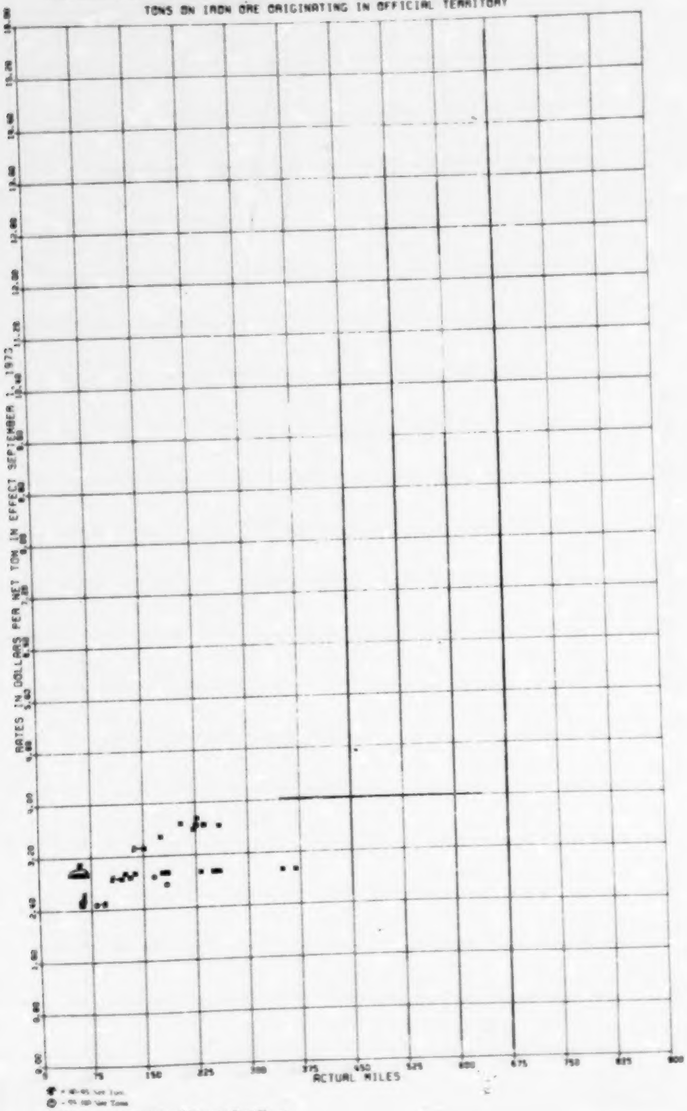
REPRESENTATIVE TRAINLOAD RATES ON ACTUAL CARLOADINGS BETWEEN 50 AND 80 NET TONS ON IRON ORE ORIGINATING IN OFFICIAL TERRITORY



[illegible] Rate returning revenue in excess of 250 percent of variable cost

[illegible]

REPRESENTATIVE TRAINLOAD RATES ON ACTUAL CARLOADINGS BETWEEN 80 AND 110 NET TONS ON IRON ORE ORIGINATING IN OFFICIAL TERRITORY



● = 80-95 Net Tons
○ = 95-110 Net Tons
(?) Rate returning revenue above 200 percent of variable costs

FIGURE 17

REPRESENTATIVE SINGLE CAR RATES ON ACTUAL CARLOADINGS BETWEEN 85 AND 125 NET TONS ON IRON ORE ORIGINATING IN SOUTHERN TERRITORY

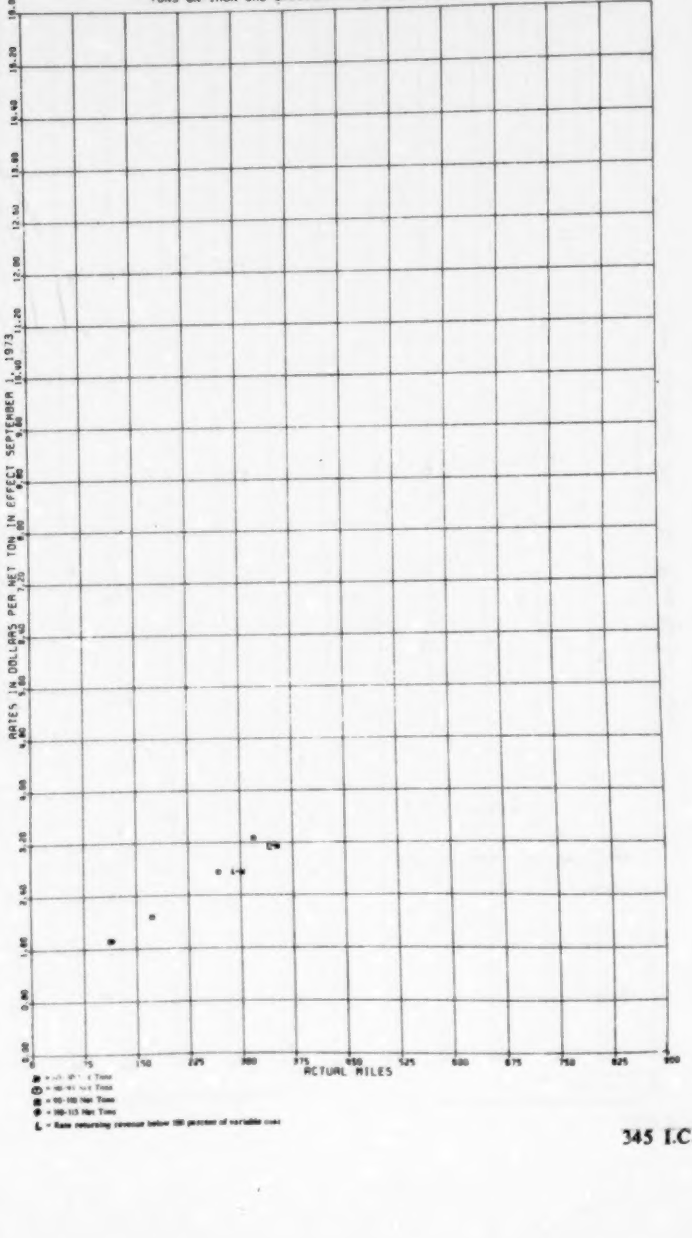


FIGURE 16

REPRESENTATIVE MULTIPLE CAR RATES ON ACTUAL CARLOADINGS BETWEEN 35 AND 110 NET TONS ON IRON ORE ORIGINATING IN SOUTHERN TERRITORY

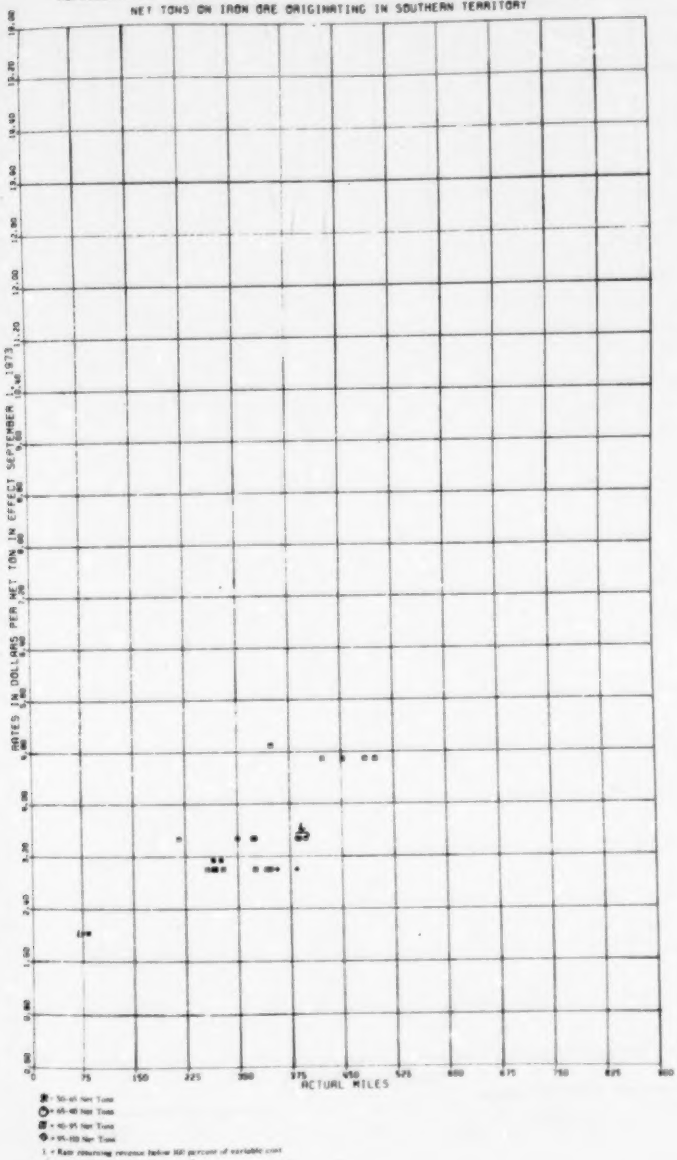
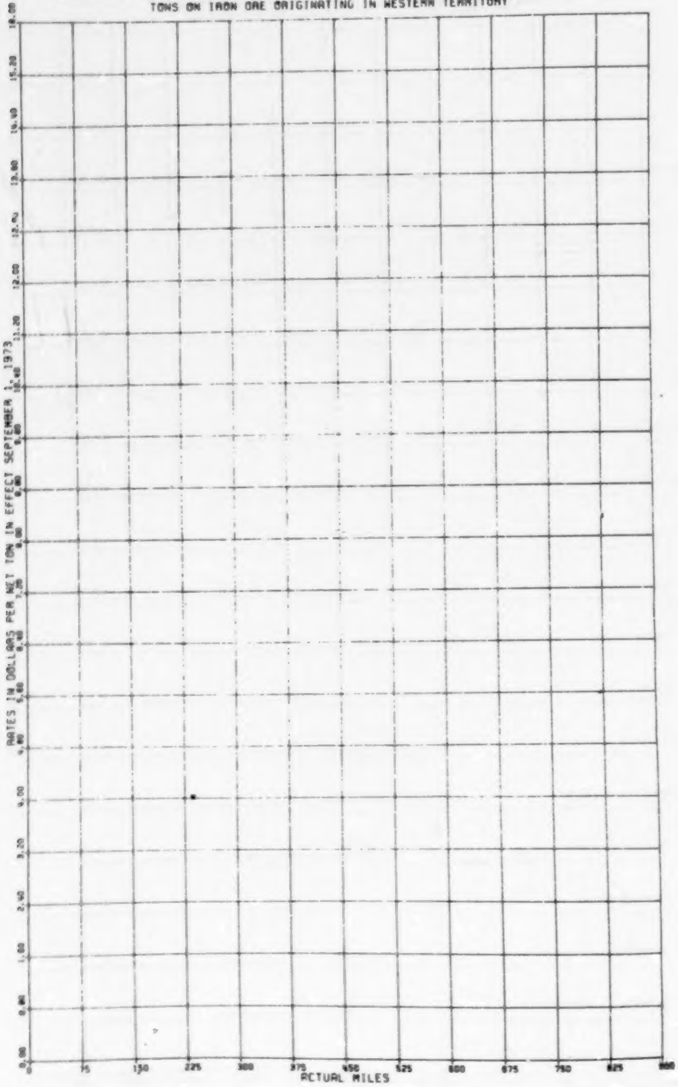


FIGURE 19

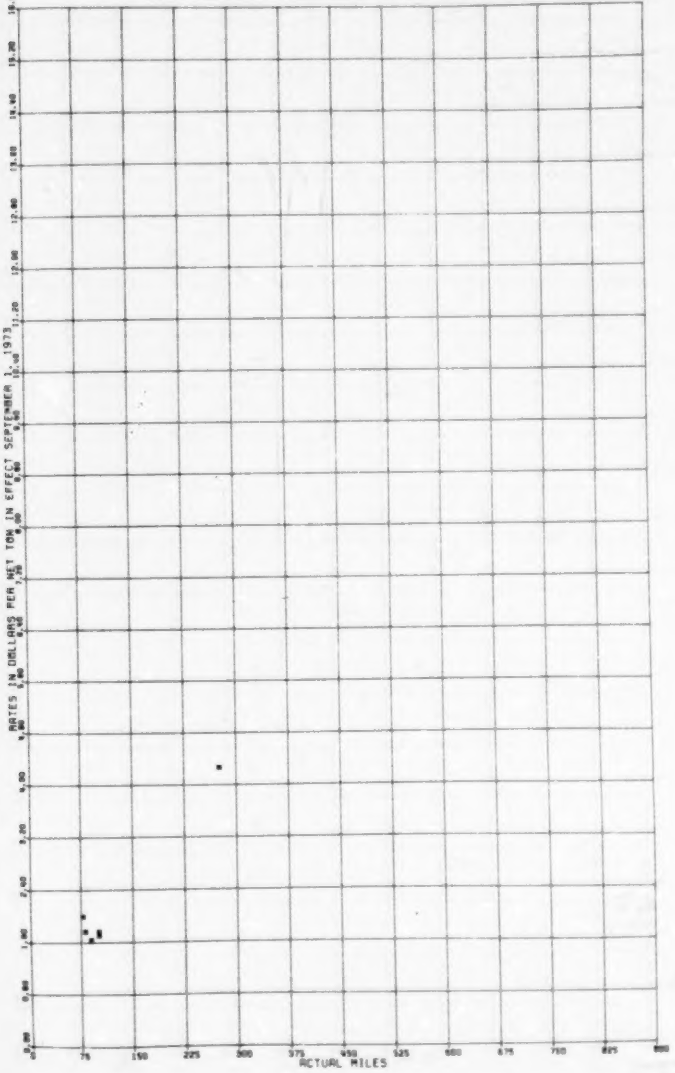
REPRESENTATIVE SINGLE CAR RATES ON ACTUAL CARLOADINGS BETWEEN 20 AND 50 NET TONS ON IRON ORE ORIGINATING IN WESTERN TERRITORY[1]



[1] rates return revenue below 100 percent of variable cost

FIGURE 30

REPRESENTATIVE SINGLE CAR RATES ON ACTUAL CARLOADINGS BETWEEN 50 AND 65 NET TONS ON IRON ORE ORIGINATING IN WESTERN TERRITORY[1]



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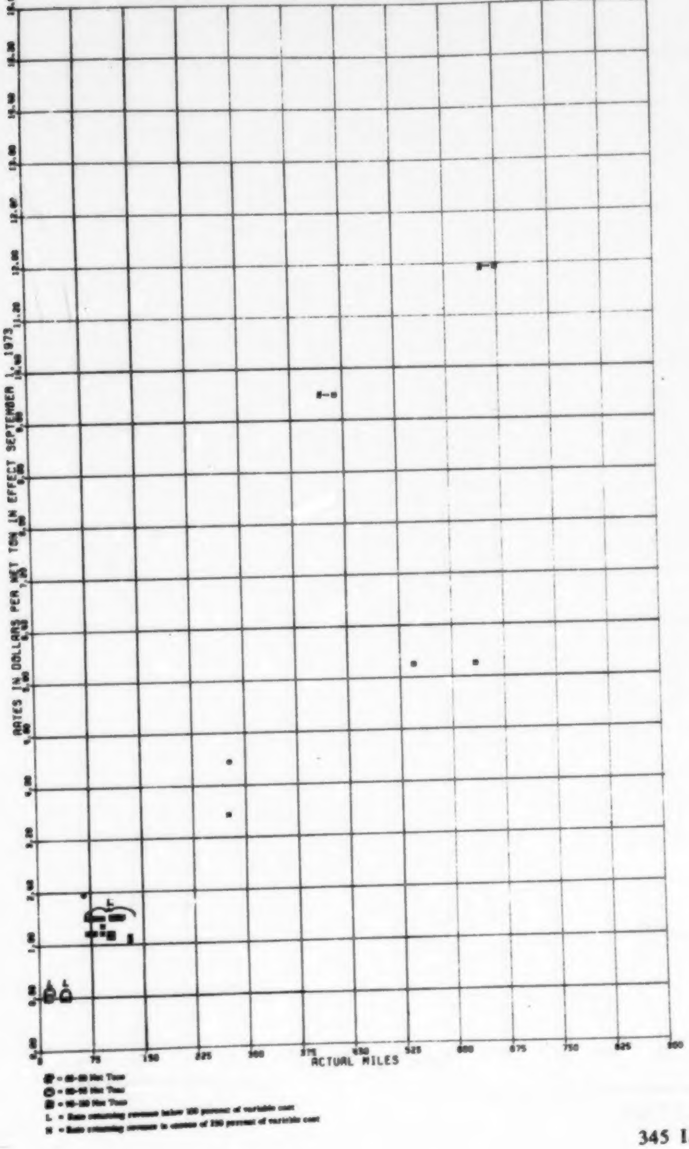
[1] All rates return revenue below 100 percent of variable cost



REPRESENTATIVE SINGLE CAR RATES ON ACTUAL CARLOADINGS BETWEEN 65 AND 125 NET TONS ON IRON ORE ORIGINATING IN WESTERN TERRITORY

FIGURE [illegible]

REPRESENTATIVE MULTIPLE CAR RATES ON ACTUAL CARLOADINGS BETWEEN 35 AND 110 NET TONS ON IRON ORE ORIGINATING IN WESTERN TERRITORY

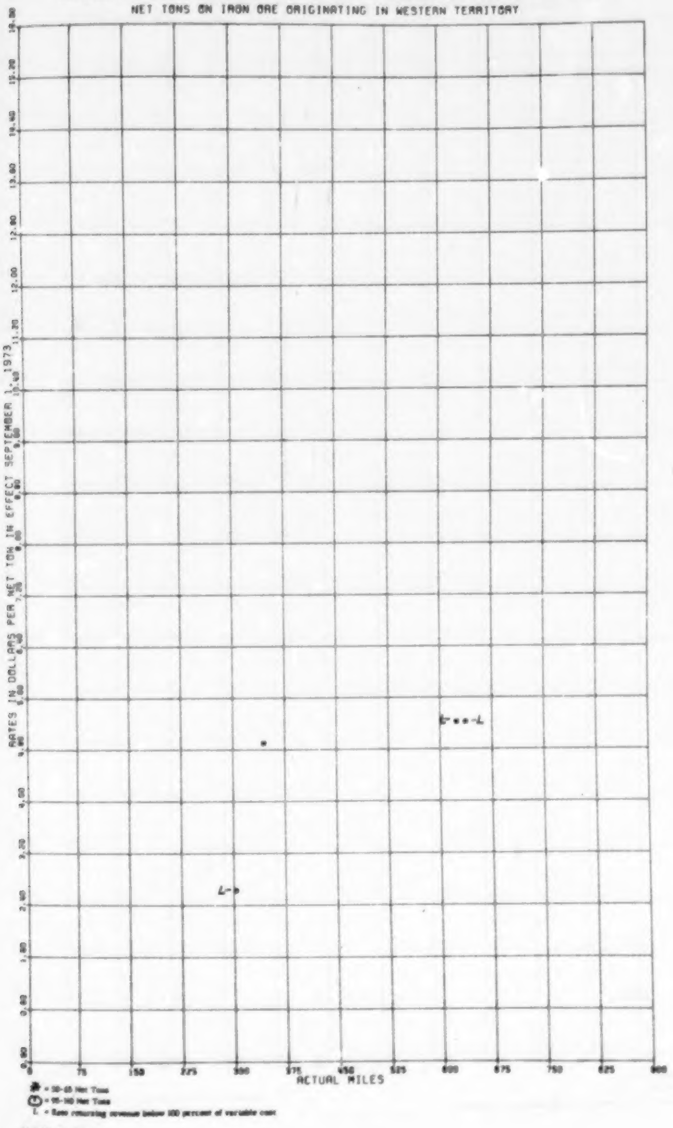


FIGURE 21

REPRESENTATIVE TRAINLOAD RATES ON ACTUAL CARLOADINGS BETWEEN 50 AND 80 NET TONS ON IRON ORE ORIGINATING IN WESTERN TERRITORY

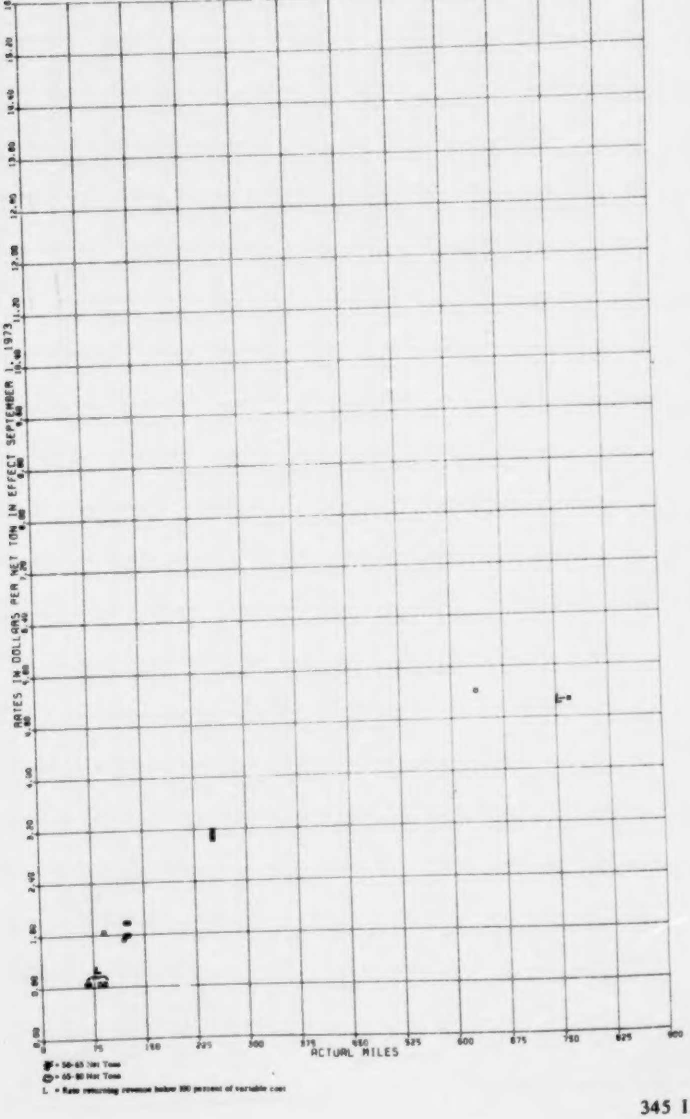
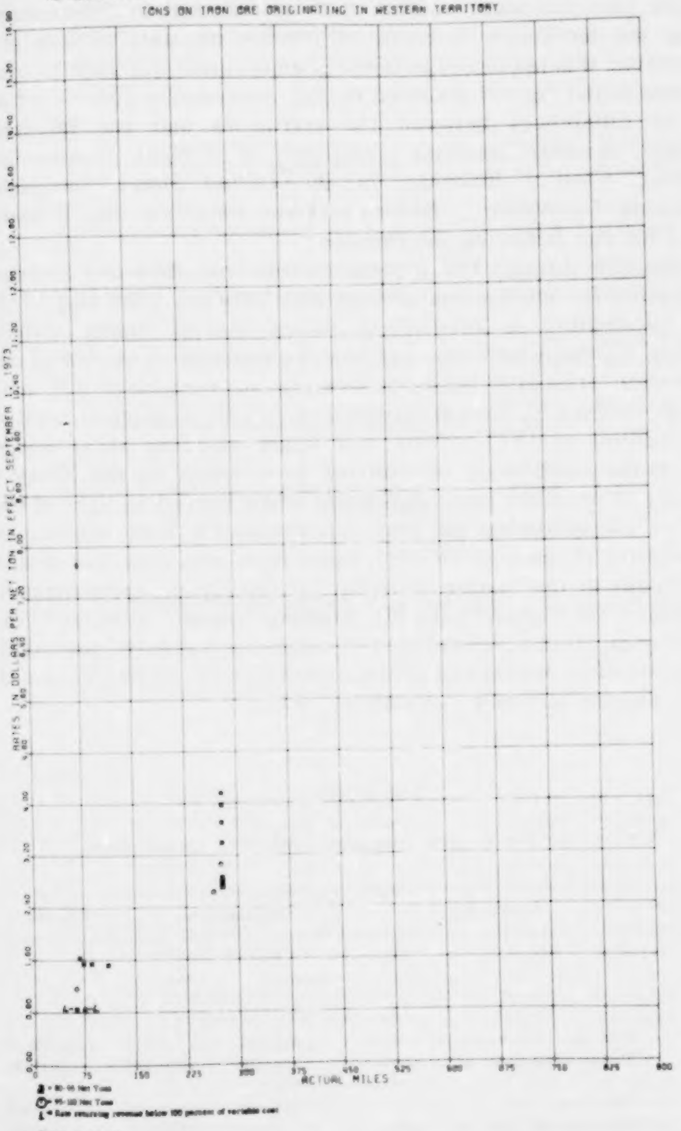


FIGURE 26

REPRESENTATIVE TRAINLOAD RATES ON ACTUAL CARLOADINGS BETWEEN 80 AND 110 NET TONS ON IRON ORE ORIGINATING IN WESTERN TERRITORY



Part 1(D)(6): Financial data of involved railroads

While previous sections have made no attempt to differentiate among the territories in terms of relative amounts of iron ore movements, it is important in terms of an accurate overview to note the total dollar figures involved in the movements considered as well as differences between the territories and the involved railroads. Annual statistics compiled in *Freight Commodity Statistics, Class I Railroads in the United States*, Interstate Commerce Commission, Bureau of Accounts, are the primary source for the following information.

Tables 166 through 169 present terminations data and revenue information for movements of iron ores between 1966 and 1973. This information is subdivided among United States eastern territory, southern territory, and western territory. A review of the information presented indicates that the movements of iron ores reported by class I railroads earned revenues in the neighborhood of $300 million in 1973. While this figure standing alone would indicate the importance of iron ore movements to the Nation's railroads, it becomes more significant when viewed in light of the involved transportation patterns. Approximately $166 million, or 55.5 percent of the total 1973 revenues from iron ores, was earned by railroads in the eastern territory. Of this figure, approximately $89 million was earned by the PC, Reading, Lehigh Valley, and Erie Lackawanna, all of which are in reorganization. Table 167 presents a breakdown of gross tons and revenue derived from shipments of iron ore by eastern territory railroads in 1973.

TABLE 166

Terminations and revenue, iron ores, 1966-1973, United States

STCC Code	Commodity	Terminations		Revenue
Year		*Carloads*	*Tons*	
1966				
101	Iron ores	1,052,716	83,409,912	$234,108,647
10112	Beneficiating-grade ore, crude	175,028	13,307,587	13,637,681
1967				
101	Iron ores	941,668	75,311,604	204,520,664
1011	Beneficiating-grade ore, crude	167,499	13,256,423	12,844,949

Terminations and revenue, iron ores, 1966-1973, United States—Continued

STCC Code	Commodity	Terminations		Revenue
Year		*Carloads*	*Tons*	
1968				
101	Iron ores	929,969	75,583,527	211,132,524
10112	Beneficiating-grade ore, crude	185,126	14,425,853	14,120,333
1969				
101	Iron ores	986,045	79,682,920	235,852,085
10112	Beneficiating-grade ore, crude	210,574	16,577,009	25,005,681
1970				
101	Iron ores	1,065,449	86,650,192	241,507,773
10112	Beneficiating-grade ore, crude	217,795	16,895,842	23,915,508
1971				
101	Iron ores	942,845	76,424,768	240,002,410
10112	Beneficiating-grade ore, crude	191,995	15,038,630	22,336,079
1972				
101	Iron ores	969,915	80,310,198	244,039,543
10112	Beneficiating-grade ore, crude	169,856	13,121,646	21,308,732
1973				
101	Iron ores	1,144,187	93,553,896	299,519,000
10112	Beneficiating-grade ore, crude	183,378	14,721,511	20,751,000

TABLE 167

Terminations and revenue, iron ores, 1966-1973, Eastern Territory

STCC Code	Commodity	Terminations		Revenue
Year		*Carloads*	*Tons*	
1969				
101	Iron ores	720,333	56,531,262	$127,335,509
10112	Beneficiating-grade ore, crude	43,938	3,608,725	7,310,070
1967				
101	Iron ores	657,568	52,067,639	109,028,518
10112	Beneficiating-grade ore, crude	53,342	4,306,768	6,270,273
1968				
101	Iron ores	652,144	52,119,568	112,205,612
10112	Beneficiating-grade ore, crude	52,344	4,207,505	7,328,859
1969				
101	Iron ores	708,911	56,439,753	125,520,975
10112	Beneficiating-grade ore, crude	72,981	5,758,289	16,219,470
1970				
101	Iron ores	652,864	51,950,815	126,895,493
10112	Beneficiating-grade ore, crude	67,353	5,262,253	15,087,134
1971				
101	Iron ores	565,854	45,481,445	129,712,350
10112	Beneficiating-grade ore, crude	56,100	4,556,881	13,260,194

Terminations and revenue, iron ores, 1966-1973, Eastern Territory—Continued

STCC Code	Commodity	Terminations		Revenue
Year		*Carloads*	*Tons*	
1972				
101	Iron ores	576,318	47,415,099	136,037,374
10112	Beneficiating-grade ore, crude	48,570	3,904,632	12,627,258
1973				
101	Iron ores	672,535	55,191,530	165,923,000
10112	Beneficiating-grade ore, crude	56,717	4,684,972	13,697,000

TABLE 168

Terminations and revenue, iron ores, 1966-1973, Southern Territory

STCC Code	Commodity	Terminations		Revenue
Year		*Carloads*	*Tons*	
1966				
101	Iron ores	47,661	3,431,327	$9,128,679
10112	Beneficiating-grade ore, crude	5,757	451,216	563,930
1967				
101	Iron ores	38,761	2,900,386	8,317,109
10112	Beneficiating-grade ore, crude	6,710	584,263	824,968
1968				
101	Iron ores	32,671	2,665,747	7,852,798
10112	Beneficiating-grade ore, crude	9,531	881,424	1,317,186
1969				
101	Iron ores	36,601	3,016,062	8,821,122
10112	Beneficiating-grade ore, crude	9,962	996,568	1,521,922
1970				
101	Iron ores	33,863	2,611,281	8,011,183
10112	Beneficiating-grade ore, crude	4,702	465,338	742,039
1971				
101	Iron ores	28,901	2,256,151	8,550,250
10112	Beneficiating-grade ore, crude	4,781	441,425	745,135
1972				
101	Iron ores	24,407	2,177,386	5,719,213
10112	Beneficiating-grade ore, crude	3,970	405,056	741,383
1973				
101	Iron ores	21,176	1,790,521	5,260,000
10112	Beneficiating-grade ore, crude	2,827	270,952	541,000

TABLE 169

Terminations and revenue, iron ores, 1966-1973, Western Territory

STCC Code	Commodity	Terminations		Revenue
Year		*Carloads*	*Tons*	
1966				
101	Iron ores	284,722	23,447,323	$97,644,459
10112	Beneficiating-grade ore, crude	125,333	9,247,646	5,763,681
1967				
101	Iron ores	245,339	20,343,579	87,175,037
10112	Beneficiating-grade ore, crude	107,447	8,365,392	5,749,698
1968				
101	Iron ores	245,154	20,798,122	91,074,132
10112	Beneficiating-grade ore, crude	123,251	9,336,924	5,474,288
1969				
101	Iron ores	240,533	20,227,105	101,509,989
10112	Beneficiating-grade ore, crude	127,631	9,822,152	7,264,289
1970				
101	Iron ores	378,722	32,088,096	106,601,097
10112	Beneficiating-grade ore, crude	145,740	11,168,251	8,086,335
1971				
101	Iron ores	348,090	28,687,172	101,739,810
10112	Beneficiating-grade ore, crude	131,114	10,040,324	8,330,750
1972				
101	Iron ores	368,190	30,717,713	102,282,956
10112	Beneficiating-grade ore, crude	117,316	8,811,958	7,940,091
1973				
101	Iron ores	450,476	36,971,845	128,336,000
10112	Beneficiating-grade ore, crude	123,834	9,765,587	6,513,000

Approximately $128 million or 42.8 percent of the U.S. total was earned by western territory railroads. Again the picture may be sharpened by noting that upper lake carriers earning approximately $91 million in 1973 from movements of iron ores or 70.5 percent of the total western territory earnings. The iron ore revenue of the upper lake carriers combined with the iron ore revenue of the eastern territory carriers totaled approximately $256,400,000 in 1973. This total represents 85.6 percent of all revenues earned by carriers nationwide on iron ores in that year. Thus it should be recognized that the vast majority of iron ore movements occur within a limited geographic segment of the United States.

Table 171, as noted above, gives more detailed information in regard to eastern territory carriers and tables 172 through 175 provide data on western territory movements and revenue. Of particular interest from the standpoint of revenue contribution is the data presented in table 172 in regard to the DM&IR.

In 1973 the DM&IR, a subsidiary of the United States Steel Corporation, accounted for approximately one-third of all movements of iron ores by common carriers in the Lake Superior region. Iron ores represented 69 percent of the tonnage and 83 percent of the gross revenue of the DM&IR in that year. Thus, the DM&IR provides an excellent example for the study of the effect of the iron ore rate structure on railroad earnings. The following information has been provided by the parties in regard to the DM&IR's profitability.

TABLE 170

DM&IR financial data

Year	Net railway operating income	Return on net investment	Dividends paid
	(000)	*Percent*	*(000)*
1970	$5,787	6.29	$14,000
1971	5,593	6.10	--------
1972	4,836	5.31	12,000
1973	7,713	8.61	8,100

TABLE 171

Gross tons and revenue derived from shipments of iron ore by eastern railroads in thousands—1973

Eastern class I railroads	Revenue	Percent of total	Gross tons	Percent of total
Penn Central	$66,471	40.1	23,912	32.3
Norfolk & Western	6,982	4.2	3,210	4.3
Chesapeake & Ohio	10,784	6.5	3,516	4.7
Baltimore & Ohio	17,353	10.5	5,935	8.0
Western Maryland	1,497	0.9	1,093	1.5
Reading	10,355	6.3	5,044	6.8
Bessemer & Lake Erie	26,746	16.1	16,034	21.6
Erie Lackawanna	10,347	6.2	4,545	6.1
Lehigh Valley	1,698	1.0	1,610	2.2
Pittsburgh & Lake Erie	10,166	6.1	7,455	10.1
All other class I roads	3,518	2.1	1,776	2.4
Total	165,927	100.0	74,120	100.0

Source: Freight commodity statistics.

TABLE 172

1973 Freight revenue comparison iron ore v. gross railway operating revenue

Carrier	1973 Gross railway operating revenue	1973 Gross iron ore freight revenue	Percent iron ore is of total
ATSF	$947,743,067	$287,776	less than 1
BN	1,093,603,187	24,401,702	2.2
CNW	416,681,378	10,633,420	2.6
CMSTPP	355,390,276	722,986	less than 1
CRIP	329,001,796	13,728	less than 1
C&S	31,469,122	2,597,158	8.3
DRGW	118,873,865	2,544,603	2.1
DMIR	59,674,211	49,376,712	82.7
DW&P	14,789,101	10,854	less than 1
KCS	120,953,571	733,018	6.1
LSI	6,341,196	4,933,600	77.8
MKT	90,042,280	1,675	less than 1
MP	532,035,365	6,960,950	less than 1
SL-SF	254,969,232	431,419	less than 1
SLSW	163,404,616	4,647	less than 1
SOO	168,324,179	429,805	less than 1
SP	1,192,913,903	7,819,983	less than 1
T&P	128,684,770	201,810	less than 1
UP	870,920,901	16,173,550	1.9
WP	89,578,217	55,356	less than 1

TABLE 173

1973 Iron ore freight revenue by area

Area	Revenue	Percent
"Great Lakes Area"	$90,509,079	70.53
"Missouri Area" and "Other Western Area"	37,825,673	29.47
Total western district	128,334,752	100.00

TABLE 174

Gross freight revenue derived from the movement of iron ore by western district carriers.

Item No.	Railroad	Year 1966		Year 1969		Year 1972		Year 1973	
		Iron ore Frt. Rev.	Percent of West. Dist.	Iron ore Frt. Rev.	Percent of West. Dist.	Iron ore Frt. Rev.	Percent of West. Dist.	Iron ore Frt. Rev.	Percent of West. Dist.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
	Upper lake carriers								
1.	BNI[1]			----------------		$16,953,910		$24,401,702	
2.	CMStP&P	$149,128		$17,369		548,532		722,986	
3.	C&NW	8,860,140		7,751,832		9,654,325		10,633,420	
4.	DM&IR	29,428,562		34,202,760		36,845,436		49,376,712	
5.	DW&P	5,174		525		18,252		10,854	
6.	GN[2]	15,515,056		18,229,842		----------------		----------------	
7.	LS&I	4,645,847		6,198,630		4,169,280		4,933,600	
8.	NP[2]	1,308,230		625,410		----------------		----------------	
9.	Soo Line	1,602,879		1,237,936		214,601		429,805	
10.	Total	61,515,016	64.01	68,264,304	67.25	68,404,336	66.88	90,509,079	70.53
	Other carriers								
11.	AT&SF	561,727		556,500		283,466		287,776	
12.	CB&Q[2]	631,225		882,674		----------------		----------------	
13.	CRI&P	17,640		21,907		16,614		13,728	
14.	C&S	1,387,289		1,423,550		2,565,056		2,597,158	
15.	D&RGW	1,344,723		1,652,455		2,084,086		2,544,603	
16.	FW&D	83		10,120		----------------		----------------	

See footnotes at end of table.

Gross freight revenue derived from the movement of iron ore by western district carriers—Continued

Item No.	Railroad	Year 1966		Year 1969		Year 1972		Year 1973	
		Iron ore Frt. Rev.	Percent of West. Dist.	Iron ore Frt. Rev.	Percent of West. Dist.	Iron ore Frt. Rev.	Percent of West. List.	Iron ore Frt. Rev.	Percent of West. Dist.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
	Other carriers—Continued								
17.	KCS	1,843		199,740		535,562		733,018	
18.	KO&G	----------		165		----------		----------	
19.	MKT	2,525		735		3,415		1,675	
20.	MoPAC	3,191,917		5,228,773		6,555,353		6,960,950	
21.	SP&S[2]	2,843		2,927		----------		----------	
22.	SP	14,702,831		11,228,082		6,164,177		7,819,983	
23.	SL-SF	759,708		584,511		1,143,941		431,419	
24.	SLSW	6,734		6,006		6,802		4,647	
25.	T&P	954		18,521		72,200		201,810	
26.	UP	11,559,532		11,425,923		14,420,931		16,173,550	
27.	WP	411,691		3,102		26,137		55,356	
28.	Total	34,583,265	35.99	33,245,691	32.75	33,877,740	33.12	37,825,673	29.47
29.	Western district	96,098,281	100.00	101,509,995	100.00	102,282,076	100.00	128,334,752	100.00

[1] Formed in March 1970.

[2] Merged into BNI in March 1970.

Source: Quarterly Commodity Statistics (QCS)—Annual—1966, 1969, 1972, 1973.

TABLE 175

Annual railroad revenues on iron ore shipped by Upper Lake shippers from Upper Lakes' ranges to the Upper lakes' ports in years 1966, 1969, and 1972
(Revenues are based on rates in effect as of June 30 of the year indicated)

Rate type/movement/commodity	Annual revenues		
	1966	1969	1972
Single car rates			
1. Mesabi Range to Duluth/Superior	$16,003,068	$12,974,492	$12,065,435
a. 10111—Prescribed dumping	16,003,068	12,974,492	6,092,463
b. 10111—Random dumping	0	0	5,972,972
2. Cuyuna range to Duluth/Superior—10111	1,197,975	1,144,284	360,169
3. Marquette range to Marquette	4,852,631	5,394,538	2,691,932
a. 10111	1,347,978	905,418	428,726
b. 10113	3,504,653	4,489,120	2,263,206
4. Marquette range to Escanaba	2,606,328	0	0
a. 10111	669,898	0	0
b. 10113	523,799	0	0
c. 10113 (Empire mine only)	1,412,631	0	0
5. Menominee range to Escanaba	4,409,767	1,378,002	261,047
a. 10111	2,741,173	1,378,002	261,047
b. 10113	1,668,594	0	0
6. Total single car rates	29,069,769	20,891,316	15,378,583
a. 10111	21,960,092	16,402,196	13,115,377
b. 10113	7,109,677	4,489,120	2,263,206
Annual volume rates			
7. Mesabi range to Duluth/Superior	2,258,464	10,073,035	11,670,537
a. 10113—Mine to port	2,258,464	3,102,460	4,046,930
b. 10113—Storage	0	2,736,043	2,974,647
c. 10113	0	4,234,532	4,648,960
8. Marquette range to Escanaba—10113	0	3,850,247	5,857,391
9. Menominee range to Escanaba—10113	0	2,000,515	1,778,001
10. Total annual volume rates—10113	2,258,464	15,923,797	19,305,929
11. Total single car and annual volume rates	31,328,233	36,815,113	34,684,512
a. 10111	21,960,092	16,402,196	13,115,377
b. 10113	9,368,141	20,412,917	21,569,135

Source: Appendix A, sheet 1 X appendix c, sheet 1.

These data clearly indicate that movements of iron ore are profitable for the DM&IR. While obvious questions are raised as to the capacity of any railroad to pay out more in dividends than the total net railway income, such questions are beyond the scope of this investigation.

The remaining 1.7 percent of revenues earned on movements of iron ore in the United States is earned by carriers within southern territory. Additional data on these earnings as well as a comparison of total freight revenue with iron ore revenue within the South between 1958 and 1972 are shown in table 176. Freight revenue on iron ores in 1973 for southern territory carriers is given as $5,260,000 in table 168. A comparison of this figure with the 1966 revenue ($9,128,679) indicates a reduction of $3,868,679 or 42.4 percent in this 7-year period. This reduction is matched by an even greater reduction in the percentage of iron ore revenue to all freight revenues (0.65 in 1966 to 0.25 in 1972). While general freight rate increases have been applied to iron ore rates during this period, the decline in tonnages (see table 168) has been significant and appears to be continuing.

Tables 177 through 195 present financial data, as submitted by the parties, on movements of iron ore by individual railroads. It is hoped that the inclusion of these data will be of assistance in understanding the traffic patterns of iron ores and the relative impacts of iron ore movements on various railroads.

Finally, it is noted that parties have attempted to use the freight commodity statistics in order to present a revenue-per-ton analysis on an annual basis. For the most part, terminated tons have been divided into gross revenue to arrive at the revenue per ton figure. Unfortunately the Freight Commodity Statistics, as currently compiled, do not lend themselves to this type of analysis. While a great deal of iron ore traffic moves in single-line service, some traffic is originated by one carrier and delivered by another. In selected cases a third railroad may serve as a bridge carrier. Because the reporting system currently utilized does not provide a total-traffic-moved figure without also including duplications, it is impossible to derive an accurate revenue per ton figure. It is clearly improper to measure revenue per ton by utilizing either tons originated or tons terminated as shifting traffic patterns or longstanding imbalances between total movements and either of these two categories would invalidate the results reached. As a result of this failing within the reporting system, the Coordinator recommends that the data compiled for the Freight Commodity Statistics be altered to show traffic originated, traffic interlined, traffic terminated and traffic carried in single-line service. The total of these categories will provide a figure that may be divided into total revenue to derive an accurate revenue per ton calculation.

TABLE 176

Statement showing percent total iron ore revenue is to all freight traffic in Southern District

Year	Gross freight revenue		Percent Iron ore of all freight
	All freight	Iron ore	
1958	$1,190,783,399	$7,594,146	.64
1959	1,235,488,778	7,994,510	.65
1960	1,184,367,149	8,192,435	.69
1961	1,179,497,247	6,518,264	.55
1962	1,243,827,052	6,845,775	.55
1963	1,280,333,160	7,404,497	.58
1964	1,341,115,422	8,036,486	.60
1965	1,400,859,569	8,557,431	.61
1966	1,485,692,894	9,128,679	.65
1967	1,517,158,101	8,317,109	.55
1968	1,630,227,631	7,852,798	.48
1969	1,785,412,784	8,821,122	.49
1970	1,936,281,093	8,011,183	.41
1971	2,124,470,292	8,550,250	.40
1972	2,279,028,446	5,719,213	.25

Source: ICC Freight Commodity Statistics - years 1958-1972.

TABLE 177

Iron ores

STCC 10111, 10112, 10113

Railroad Atchison, Topeka & Santa Fe						
	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads	407	366	191	191	1	4
Tons	32,610	29,195	14,718	14,349	88	273
Freight revenue						
Dollars	216,233	176,481	108,871	85,052	384	3,177
Average revenue						
Per ton-----(dollars)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Per ton mile---(cents)	do	do	do	do	do	do
Per car-----(dollars)	do	do	do	do	do	do
Average						
Per car-----(tons)	do	do	do	do	do	do
Ton haul-----(miles)	do	do	do	do	do	do

N.A. - Not Available.

TABLE 178

Iron ores

STCC 10111, 10112, 10113

Railroad Burlington Northern Inc.

	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads	1,400	155	405	607	204,329	161,646
Tons	97,000	9,000	28,000	40,000	14,673,000	11,739,000
Freight revenue						
Dollars	577,000	30,000	62,000	74,000	23,760,000	16,848,000
Average revenue						
Per ton-----(dollars)	5.95	3.51	2.20	1.85	1.62	1.44
Per ton mile---(cents)	.44	1.17	1.73	1.46	1.14	1.31
Per car-----(dollars)	412.15	194.84	153.77	121.88	116.28	104.22
Average						
Per car-----(tons)	69.2	55.5	70.0	65.8	71.8	72.6
Ton haul-----(miles)	1,351	301	127	127	142	110

TABLE 179

Iron ores

STCC 10111, 10112, 10113

Railroad Chicago, Milwaukee, St. Paul and Pacific Railroad Company

	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads					28,919	30,842
Tons					1,974,993	2,183,162
Freight revenue						
Dollars					1,273,658	1,155,022
Average revenue						
Per ton-----(dollars)					.64	.53
Per ton mile---(cents)					1.42	1.29
Per car-----(dollars)					44.04	37.45
Average						
Per car-----(tons)					63.16	65.06
Ton haul-----(miles)					45	41

TABLE 180

Iron ores

STCC 10111, 10112, 10113

Railroad Chicago and North Western	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads	7,054	8,659	40	25	140,289	127,568
Tons	481,157	600,537	2,062	1,506	11,280,286	10,327,386
Freight revenue						
Dollars	842,699	975,412	9,470	7,663	10,125,791	8,657,085
Average revenue						
Per ton-----(dollars)-----	1.75	1.62	4.59	5.09	.90	.84
Per ton mile---(cents)--	1.47	1.52	1.32	1.32	.81	.93
Per car-----(dollars)-----	119.46	112.65	236.75	306.52	72.18	67.87
Average						
Per car-----(tons) --------	68.2	69.4	51.6	60.2	80.4	81.0
Ton haul-----(miles)-----	119	107	349	384	111	90

TABLE 181

Iron ores

STCC 10111, 10112, 10113

Railroad Chicago, Rock Island & Pacific						
	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads		14	78	102	12	3
Tons		752	4,178	5,244	634	140
Freight revenue						
Dollars		2,671	11,505	13,146	2,221	797
Average revenue						
Per ton (dollars)		2.71	2.75	2.71	3.50	2.71
Per ton mile (cents)		1.1	1.2	1.1	1.5	1.1
Per car (dollars)		190	147	129	185	265
Average						
Per car (tons)		53.71	53.56	51.41	52.83	46.67
Ton haul (miles)		246	238	246	238	246

TABLE 182

Iron ores

STCC 10111, 10112, 10113

Railroad Colorado & Southern						
	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads	10,935	9,303				
Tons	832,000	754,000				
Freight revenue						
Dollars	2,609,000	2,565,000				
Average revenue						
Per ton (dollars)	3.14	3.40				
Per ton mile (cents)	239	276				
Average						
Per car (tons)	76	81				
Ton haul (miles)	264	293				

TABLE 183

Iron ores

STCC 10111, 10112, 10113

Railroad Denver & Rio Grande Western

	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads	2,486	2,175				
Tons	163,130	144,175				
Freight revenue						
Dollars	600,318	516,350				
Average revenue						
Per ton------(dollars)----	3.68	3.58				
Per ton mile---(cents)--	1.33	1.30				
Per car------(dollars)----	241.00	237.00				
Average						
Per car-------(tons) ------	65.6	66.3				
Ton haul------(miles)----	276	276				

TABLE 184

Iron ores

STCC 10111, 10112, 10113

Railroad Duluth, Missabe and Iron Range

	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads			118,712	105,374	420,340	330,385
Tons------------(2240 lbs.)--------			8,274,588	6,811,634	27,892,259	21,944,330
Freight revenue						
Dollars			2,327,598	1,979,377	47,049,114	34,866,059
Average revenue						
Per ton----------------(dollars) ---			.28	.29	1.69	1.59
Per ton mile----------(cents) ----			2.34	2.46	2.23	2.13
Per car---------------(dollars) ----			19.61	18.78	111.93	105.53
Average						
Per car-----(tons)--(2240 lbs.)-			69.70	64.64	66.36	66.42
Ton haul----------------(miles) --			11.98	11.79	75.7	74.6

TABLE 185

Iron concentrates or agglomerates

STCC 10113

Railroad Elgin, Joliet & Eastern Railway Co.		
	1973	1972
Carloads	8,392	33
Tons	545,182/G.T.	1,912/G.T.
Freight revenue		
Dollars	786,224	7,595
Average Revenue		
Per ton (dollars)	1.44/G.T.	3.97/G.T.
Per ton mile (cents)	1.10/G.T.M.	2.48/G.T.M.
Per car (dollars)	94	230
Average		
Per car (tons)	65	58
Ton haul (miles)	126.6	16.0

Table 186

Iron ore (STCC 101) transported by Illinois Central Gulf RR and its predecessor lines, Former IC and GMO Railroads, during years 1967-1973

		IC or GMO originated				Interline received								
		Local		Forwarded		IC or GMO Del'y		Forwarded		Total		Total Revenue (dollars)	Average Rev. Per car ($)	Average tons per car
Year	Road	C/L's	Tons	C/L's	Tons	C/L's	Tons	C/L's	Tons	C/L's	Ton			
1967-------	IC	-	-	999	72,753	6,263	430,111	15	1,128	7,277	503,992	523,781	71.98	69.26
	GMO	931	65,684	6,306	612,772	100	6,209	5	371	7,342	685,036	1,267,004	172.57	93.30
	Total	931	65,684	7,305	685,525	6,363	436,320	20	1,499	14,619	1,189,028	1,790,785	122.50	81.33
1968-------	IC	-	-	1,345	96,010	2,446	169,957	10	710	3,801	266,677	341,667	89.89	70.16
	GMO	491	38,280	5,117	501,202	22	1,643	4	294	5,634	541,419	1,027,172	182.32	96.10
	Total	491	38,280	6,462	597,212	2,468	171,600	14	1,004	9,435	808,096	1,368,839	145.08	85.65
1969-------	IC	-	-	60	4,587	2,836	176,845	5	329	2,901	181,761	256,473	88.41	62.65
	GMO	306	20,959	6,366	494,150	-	-	2	173	6,674	515,282	1,063,546	159.36	77.21
	Total	306	20,959	6,426	498,737	2,836	176,845	7	502	9,575	697,043	1,320,019	137.86	72.80
1970-------	IC	1	43	83	6,439	1,583	109,511	19	1,216	1,686	117,209	159,981	94.89	69.52
	GMO	655	38,112	5,436	528,057	1	57	1	95	6,093	566,321	1,207,195	198.13	92.95
	Total	656	38,155	5,519	534,496	1,584	109,568	20	1,311	7,779	683,530	1,367,176	175.75	87.87
1971-------	IC	-	-	566	47,233	1,101	69,580	3	209	1,670	117,022	172,595	103.35	70.07
	GMO	710	50,248	4,334	429,125	2	169	74	6,184	5,120	485,726	1,146,261	223.83	94.87
	Total	710	50,248	4,900	476,358	1,103	69,749	77	6,393	6,790	602,748	1,318,856	194.24	88.77
1972-------	IC	24	1,454	103	8,825	119	5,555	2	142	248	15,976	33,903	136.71	64.42
	GMO	1,085	89,364	123	12,048	3	247	-	-	1,211	101,659	285,940	236.12	83.95
	Total	1,109	90,816	226	20,873	122	5,802	2	142	1,459	117,635	319,843	219.22	80.63
1973-------	ICG	323	26,063	4	240	2	151	7	527	336	26,981	127,688	380.02	80.30

Source: QCS Annual Reports

TABLE 187

Iron ores

STCC 10111, 10112, 10113

Railroad Lake Superior & Ishpeming						
	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads	435	2,917	9,981	4,944	92,142	81,898
Tons	32,219	185,000	633,972	293,223	6,513,536	5,661,605
Freight revenue						
Dollars	31,670	172,153	588,207	272,675	4,184,960	3,717,792
Average revenue						
Per ton (dollars)	.98	.93	.93	.93	.64	.66
Per ton mile (cents)	15.9	4.2	9.3	9.3	3.1	3.1
Per car (dollars)	72.80	59.02	58.93	55.15	45.42	45.40
Average						
Per car (tons)	74.1	63.4	63.5	59.3	70.1	69.1
Ton haul (miles)	6.2	22.2	10.0	10.0	20.4	21.1

TABLE 188

Statement showing movements of iron ore via the Louisville and Nashville Railroad, system wide, for the years 1967 through 1973, as reported in the quarterly commodity statistics filed with the Interstate Commerce Commission

Year	Revenue freight originating on respondent road				Revenue freight received from connecting carriers				Total revenue freight carried		Average tons per car from total figures	Freight revenue dollars	Average revenue per car from total figures	Average revenue per ton
	Terminating on line		Delivered to connections		Terminating on line		Delivered to connections							
	Number of carloads	Number of tons	Number of carloads	Number of tons	Number of carloads	Number of tons	Number of carloads	Number of tons	Number of carloads	Number of tons				
1967----	11,315	842,069	9,379	840,464	5,979	410,599	7	405	26,680	2,093,537	78.5	$3,484,696	$131	1.66
1968----	9,132	726,174	8,239	725,082	3,425	238,143	-------	---	20,796	1,689,399	81.2	3,115,882	150	1.85
1969----	12,416	974,819	8,375	750,817	3,229	222,651	4	166	24,024	1,948,453	81.1	3,784,395	158	1.95
1970----	13,440	956,798	8,955	774,888	2,172	155,466	3	150	24,570	1,887,302	76.8	4,171,410	170	2.21
1971----	12,444	900,601	6,448	593,604	1,116	77,331	-------	---	20,008	1,571,536	78.5	3,830,926	191	2.43
1972----	9,047	735,289	174	15,779	782	49,758	110	9,158	10,113	809,984	80.1	2,138,388	211	2.63
1973----	9,194	737,166	68	5,858	395	27,000	4	203	9,661	770,227	79.7	2,326,742	241	3.02

TABLE 189

Iron ore

STCC 10111, 10112, 10113

Railroad Missouri Pacific Railroad Company	*10111		10112		*10113	
	1973	1972	1973	1972	1973	1972
Carloads	12,155	4,830	17,298	24,690	12,155	4,830
Tons	1,204,963	481,144	1,695,408	2,480,725	1,204,963	481,144
Freight revenue						
Dollars	$3,405,856	$1,307,706	$3,100,519	$4,854,902	$3,405,856	$1,307,706
Average revenue						
Per ton (dollars)	2.83	2.72	1.83	1.96	2.83	2.72
Per ton mile (cents)	1.01	0.83	1.78	1.36	1.01	0.83
Per car (dollars)	280.20	270.75	179.24	196.63	280.20	270.75
Average						
Per car (tons)	99.1	99.6	98.0	100.4	99.1	99.6
Ton haul (miles)	279.11	326.59	102.53	143.86	279.11	326.59

*Under our accounting procedures, STCC No. 10-111 and 10-113 are grouped together.

TABLE 190

Iron ores

STCC 10-1*

Railroad St. Louis-San Francisco Railway Company	1973	1972
Carloads	1,544	4,428
Tons	130,953	360,998
Freight revenue		
Dollars	431,419	1,144,371
Average revenue		
Per ton (dollars)	3.29	3.17
Per ton mile (cents)	.86	.82
Per car (dollars)	279.42	258.44
Average		
Per car (tons)	85	82
Ton haul (miles)	383	388

*The Frisco did not originate any movements in 1972 or 1973 in western territory.

TABLE 191

Freight commodity statistics (Q.C.S.)—carload movements—iron ore (STCC: 101)
St. Louis-San Francisco Railway Company

Year	Local cars	Local tons	Forwarded cars	Forwarded tons	Received cars	Received tons	Intermediate cars	Intermediate tons	Total cars	Total tons	Total revenue	Average revenue per car	Average tons per car
1967------	143	9,783	7,743	675,996	845	21,312	712	44,442	9,443	751,533	$1,371,153	$145.20	80
1968------	109	8,407	5,907	555,981	526	27,373	545	38,592	7,087	630,353	1,122,373	158.37	89
1969------	77	5,853	7,246	650,742	961	18,099	338	69,666	8,622	744,360	1,363,662	158.16	86
1970------	61	4,463	7,543	692,724	2,117	68,030	684	30,122	10,405	795,339	1,566,617	150.56	76
1971------	3,261	280,250	2,747	318,045	479	47,104	3	135	6,490	645,534	1,628,775	250.97	99
1972------	3,827	344,568	82	8,108	512	51,258	7	384	4,428	404,318	1,144,371	258.44	91
1973------	1,404	133,551	5	504	114	10,683	21	1,929	1,544	146,667	431,419	279.42	95

TABLE 192

Statement showing the movement of iron ore (STCC 10-11) transported by the Seaboard Coast Line Railroad[1] [2] during the years 1967 through 1973

Year	Originating SCL revenue freight				Interline received SCL revenue freight				Total revenue freight carried		Gross freight revenue dollars	Average	
	Local		Forwarded		Delivered		Forwarded					Tons per car	Revenue per car
	Cars	Tons	Cars	Tons	Cars	Tons	Cars	Tons	Cars	Tons			
1967------	---------	---------	5,343	360,234	2,206	158,000	360	26,837	7,909	545,071	603,766	68.92	76.34
1968------	1	25	3,336	231,075	2,466	176,564	405	31,709	6,208	439,373	470,831	70.78	75.84
1969------	1	20	3,272	220,957	2,173	151,048	499	33,573	5,945	405,598	459,767	68.23	77.34
1970------	1,013	69,191	2,121	151,847	2,985	205,848	265	18,832	6,384	445,718	625,655	69.82	98.00
1971------	724	46,762	964	63,772	777	54,049	639	47,470	3,104	212,053	325,666	68.32	104.92
1972------	85	5,547	640	39,454	15	998	21	1,464	761	47,463	73,485	62.37	96.56
1973------	----------	---------	225	15,103	11	591	1	49	237	15,743	25,047	66.43	105.68

[1] Includes movements of both the Atlantic Coast Line Railroad and Seaboard Air Line Railroad for the period January 1, 1967, through June 30, 1967.

[2] Includes movements of both the Seaboard Coast Line Railroad and Piedmont and Northern Railway for the period January 1, 1967 through June 30, 1969.

Source: Interstate Commerce Commission Report of Freight Commodity Statistics.

TABLE 193

Iron ore

STCC 10111, 10112, 10113

Railroad Southern Pacific Transportation Co.

	10111		10112		10113	
	1973	1972	1973	1972	1973	1972
Carloads	35,970	21,375	2	142	3,241	8,508
Tons	3,445,604	2,778,944	116	17,490	333,467	1,124,563
Freight revenue						
Dollars	7,163,574	4,404,655	399	63,781	626,738	1,683,738
Average revenue						
Per ton-----(dollars)	2.08	1.59	3.44	3.65	1.88	1.50
Per ton mile---(cents)	N/A	N/A	N/A	N/A	N/A	N/A
Per car-----(dollars)	199.15	206.00	199.50	449.00	193.38	198.00
Average						
Per car-----(tons)	95.8	130.0	58.0	123.2	103.0	132.2
Ton haul-----(miles)	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 194

Statement showing iron ore traffic handled in connection with Southern Railway System for years 1967 thru 1973

Year	Revenue freight originating on SRS				Revenue freight recieved by SRS from connecting carriers				*Total revenue freight carried		Gross freight revenue	Average		
	Terminated on SRS		Delivered to connections		Terminated on SRS		Intermediate delivered to connections					#Revenue per car	Tons per car	#Rev. per ton
	Cars	Tons	Cars	Tons	Cars	Tons	Cars	Tons	Cars	Tons				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
STCC 10 1—Iron ores														
1967------	9,357	738,196	4,016	399,293	2,634	249,999	12	738	16,019	1,388,226	$2,436,983	$182.23	86.7	$2.14
1968------	10,452	906,689	3,421	332,536	4,339	418,223	1	25	18,213	1,657,473	2,916,694	210.24	91.0	2.35
1969------	10,719	974,121	3,840	368,710	4,921	495,869	-------	--------	19,480	1,838,700	3,257,374	223.74	94.4	2.43
1970-----	12,823	1,140,284	3,341	327,462	516	40,351	-------	--------	16,680	1,508,097	3,167,485	195.96	90.4	2.16
1971------	9,610	825,520	2,515	247,121	2,352	227,461	4,243	304,129	18,720	1,604,231	3,428,875	282.79	85.7	3.20
1972------	10,026	874,590	234	22,382	4,221	414,662	3,707	291,111	18,188	1,602,745	3,726,382	363.20	88.1	4.15
1973------	9,754	856,390	63	4,973	1,496	142,520	1,640	119,640	12,953	1,124,123	2,780,429	283.23	86.8	3.23
STCC 10 112—Beneficiating-grade ore, crude														
1967------	3,829	311,439	14	971	2,379	231,280	4	191	6,226	543,881	738,136	192.07	87.4	2.36
196[illegible]------	5,378	478,118	93	6,737	4,158	405,181	1	25	9,630	890,061	1,316,230	240.58	92.4	2.72
1[illegible]------	5,027	499,813	324	23,535	4,904	494,778	-------	-------	10,255	1,018,126	1,513,847	282.91	99.3	2.89
1970------	4,216	427,643	8	635	458	36,081	-------	-------	4,682	464,359	737,460	174.59	99.2	1.72
1971------	2,046	204,949	14	976	1,671	166,657	-------	-------	3,731	372,582	734,652	356.63	99.9	3.57
1972------	2,599	268,831	20	1,383	1,290	130,035	-------	-------	3,909	400,309	812,324	310.17	102.4	3.01
1973------	2,492	243,459	47	3,776	274	23,225	-------	-------	2,813	270,460	505,778	199.20	96.1	2.05

*--Including duplications.
#--Based on originated tons.
Source--ICC Quarterly Report of Freight Commodity Statistics-Southern Railway System-Years 1967-1973.

TABLE 195

Iron ores

STCC 10111, 10112, 10113

Railroad Texas and Pacific Railway Company	[1]10111		10112		[1]10113	
	1973	1972	1973	1972	1973	1972
Carloads	2,365	710	104	184	2,365	710
Tons	235,044	72,889	8,533	18,847	235,044	72,899
Freight revenue						
Dollars	176,723	53,234	16,518	16,067	176,723	53,234
Average revenue						
Per ton (dollars)	0.75	0.73	1.94	0.85	0.75	0.73
Per ton mile (cents)	0.83	0.80	1.25	0.94	0.83	0.80
Per car (dollars)	74.72	74.98	158.83	87.32	74.72	74.98
Average						
Per car (tons)	99.3	102.6	82.0	102.4	99.3	102.6
Ton haul (miles)	91.17	91.31	154.47	90.31	91.17	91.31

[1] Under our accounting procedures, STCC No. 10-111 and 10-113 are grouped together.

Part II: Self-defeating nature of general increases on iron ores.

The Coordinator's Order to the parties of December 23, 1973, requested in part II of appendix A that the respondents show the general rate increases sought, those authorized by the Commission, and those actually applied by the carriers individually or any other rate change on all significant movements of iron ores beginning with and subsequent to Ex Parte No. 256 increases. Reasons for the application of increases less than those authorized as well as other rate changes were to be set forth.

The parties were also requested to present evidence designed to show that general rate increases on iron ores may or may not have been self-defeating in nature with respect to generating revenues.

In part I of this report the material presented by the parties in regard to rate structures, general freight rate increases, and individual rate adjustments has been set forth. It will be the purpose of this section to present the evidence submitted in regard to the "self-defeating" nature of general freight rate increases and to offer our own comments on this issue.

In general it can be stated that the railroad respondents to this proceeding do not believe that general freight rate increases or the freight rate structure on iron ores have been self-defeating with respect to generating revenues. As noted in earlier sections, whenever it was felt that the imposition of the approved increase would cause a loss of traffic, the increase was waived. Declines in traffic volumes have generally been considered to be a function of either fluctuating demand for iron ore, the loss of the traffic to lower cost barge competition, depletion of ores at the mine served, or cessation or reduced production at the involved steel mills.

The eastern railroads have compared statistics published by the American Iron Ore Association on shipments of United States and Canadian ores from loading docks to Great Lakes ports with ore and coal exchange reports of shipments by railroads from lower lake docks to establish the point that general freight rate increases have not had the effect of reducing tonnage shipped by rail to the six interior destination points mentioned in previous sections or of increasing the tonnage consumed by lakefront ports. This comparison and conclusion is seriously challenged by the steel company respondents.

Generally these ore purchasing parties have maintained that general freight rate increases have been self-defeating in terms of total rail revenue. The rationale for this assertion is that increased transportation costs for iron ores have induced these steel companies to expand and modernize their lakefront production facilities to a greater extent than their inland facilities. This, in turn, has led to smaller growth in the requirements for rail movements of iron ores in eastern territory. While the railroads have suggested that savings in iron ore transportation costs would be offset by increases in the costs for transporting coal to the lakefront mills, the steel companies have offered rate comparisons to show that whenever there are increased coal transportation costs due to the longer distances, these increases are far less than the cost of shipping ore by rail to the inland plants.

The ULS have also taken the position that general freight rate increases have been self-defeating. They point to the construction and operation of two private railroads previously mentioned, the Reserve Mining Company Railroad and the Erie Mining Company Railroad. These two lines transport in excess of 20 million tons per year, a figure equal to one-third of all upper lake movements of iron ores. The existence of these railroads and the resulting revenue loss to the regulated common carriers is considered by these parties to be at least partially due to general increases according to the involved shippers.

While it is beyond cavil that the expansion of lakefront mills and the existence of private railroads lessens the demand for rail common carrier transport of iron ores it is difficult to agree with the cause and effect relationship argued by the steel companies and the ULS. First, in regard to the expansion of the lakefront mills, it is clear that transportation costs are significant in the location of any production facility. However, it is equally clear that transportation costs are not the only determinant. Local taxation, labor supply, and the land required for the expansion are just a few of the other factors that must be considered by management. Without significantly more information than has been provided in the pleadings we cannot say that there has been direct relationship between general freight rate increases and the managerial decisions to expand lakefront facilities.

Second, in regard to the existence of the privately owned railroads, we are again unable to say that general freight rate increases have been the sole or even the major reason for their existence. Iron ore mining companies and railroads are not eleemosynary institutions. It is the goal of both to make a profit. The decisions to build the private railroads were clearly made because the involved mining companies determined that private transport would be profitable enough to justify the investment of capital necessary to purchase the physical plant required. Had this plant been purchased by the common carriers they too would have required a profit large enough to justify the investment. It appears that such private rail lines are unique to the extent that movement of a single commodity would be sufficient to financially support the rail line and the involved mining companies had the financial resources necessary to initiate operations. This is not to say that common carrier freight rates were not a significant factor in the decision to build private rail lines. Had these rates been lower the resulting decrease in the profitability of private ownership may well have been sufficient to alter the decision made by the management of the mining companies. It is difficult to maintain that the railroads should have waived the approved increases or that general freight rate increases motivated the construction of these private lines of their existence predates the recent series of increases. The rate level necessary to forestall private ownership appears to approximate the rate level that would make operation by common carrier less than profitable. We must conclude that general freight rate increases as approved by the Commission and as applied by the railroads have not been self-defeating in nature with respect to generating revenues.

Part III: Disparities and distortions caused by general increases.

The Coordinator's call for evidence by any party relating to rate changes, affected by general rate increases, for the movement of iron ores beginning with and subsequent to Ex Parte No. 256 increases which may have resulted in disparities or distortions between competing shippers and/or receivers was subjected to varying interpretations by the respondents. Many of the respondents utilized this section to state or to reiterate their positions in regard to what they perceived to be the major failings of the freight rate structure on iron ores.

A number of the respondents, most notably the railroads, took the position that there were either no disparities or distortions within the freight rate structure or no disparities or distortions of any consequence.

Two of the railroad respondents were concerned with regulatory time lags between approval of ex parte increases on interstate traffic and State commission approval of similar increases on intrastate traffic. This issue will be considered in part VI, Matters Not Otherwise Listed.

The steel companies in the Warren-Youngstown destination group continued their battle with the steel companies in the other ex-lake destination groups as to which group has been disadvantaged by the cumulative effects of ex parte increases. The elements of this debate have been discussed in part I(D)(2) of this report. As noted in that section, destination groups closer to the ex-lake ports have borne greater percentage increases than have destination groups at greater distances and the latter groups have borne greater increases when judged on a cents-per-ton standard. Each party to the proceeding receiving ex-lake ore has pointed to the changes as "evidence" that its group has been harmed by the cumulative effects of the general increase cases. We also noted in that section that we would not recommend a return to the rate relationships prescribed in *Iron Ore Rate Cases*, 41 I.C.C. 181 (1916).

The establishment of new rate relationships for the ex-lake destination groups will not be possible in this proceeding. We believe that a new proceeding will have to be instituted to perform this function. We, therefore, recommend that a new proceeding be instituted to examine the individual movements from the ex-lake ports to each of the destination groups, to determine revenue-cost relationships for each of these movements, to determine the total tonnages moved under each rate, and to further determine the weighted average revenue-cost relationship from the ex-lake ports to each of the destination groups. The weighted averages may then be compared to determine whether particular destination groups are being disadvantaged by bearing a greater percentage of the revenue contribution from iron ores than is being borne by competing destination groups. Adjustments in rate relationships should be made on the basis of these calculations. As noted infra, future general rate increases on iron ores should be made on flat percentage bases to forestall alterations in the rate relationships.

Alan Wood Steel Company has raised the issue of the comparison between "captive" and "noncaptive" freight rates on iron ores. For purposes of this discussion, "captive" traffic will be defined as that traffic on which there is no competition between carriers, either intermodal or intramodal.

The basis of this issue is that competition between carriers desiring to transport iron ores tends to hold down freight rates, which in the absence of such competition would tend to rise. This is not to say that ex parte increases have not been applied to noncaptive movements as well as to captive movements. However, instances of waivers of ex parte increases for competitive reasons have been noted in the pleadings of many of the parties. In addition, the base rates which have been raised by general increase proceedings are normally higher on captive traffic than on similar movements of noncaptive traffic.

The results of establishing freight rates on the basis of competitive factors may, in many instances, be negative. First, the shippers and receivers of captive traffic must absorb the higher freight rates to the detriment of their profits or market competitive situation. Second, the involved railroads will tend to use the increased profits from captive traffic to offset lower profits on noncaptive traffic. If left unchecked, this tendency would lead to the sort of unjust discrimination that was one of the important reasons for the promulgation of the Interstate Commerce Act and the creation of the Interstate Commerce Commission.

It is clear that not all disparities of this nature are in conflict with the provisions of the act. In the absence of other considerations, railroad management has complete freedom to adjust freight rates within the zone of reasonableness. However, rates on noncaptive movements that are noncompensatory are clearly outside the zone of reasonableness. Similarly, rates on captive traffic that are clearly excessive when compared to rates on similar commodities moving in similar transportation circumstances are also outside the zone of reasonableness. The principle of relative reasonableness enunciated in *Chicago Board of Trade* v. *Illinois Central R. Co.*, 329 I.C.C. 529, 532 (1967), is applicable here. At the risk of oversimplification, the considerations involved in the term relative reasonableness are these: rates that are not "intrinsically unreasonable" under standards established by the act and Commission decisions rendered thereunder may be found relatively unreasonable if, upon consideration of rates on like traffic in the same general territory, we are convinced that the rates cited by way of comparison are properly comparable and that, when given the weight to which they are entitled, they sufficiently indicate that the level of the rates attacked is too high. Of course, it must be clear that the rates compared with the rates under attack are not too low.

Stated another way, a rate may be unreasonable in relation to another, or relatively, as a result of comparing the two. A rate likewise may be unreasonable in relation to cost, in relation to a prescribed basis of rates, or in relation to any other satisfactory standard which permits us to measure and determine the factual question presented *Chicago Board of Trade*, *supra*, at 533.

In considering the issue of relative reasonableness in regard to the freight rate structure on iron ores, a few basic facts must be understood. First, the vast majority of all iron ore traffic in each of the territories moves on point-to-point commodity rates. Thus, it is not profitable to consider scale rate comparisons or classification comparisons between the territories. Second, the point-to-point commodity rates to be considered have been subjected to numerous changes over the past 50 years. Multiple-car and unit-train rates have been published as well as the single-car rates initially instituted. Rate relationships have been established between certain origin and destination points and these relationships have altered over the period of many years, either as the result of Commission action or action initiated by the railroads. Thus, when the term freight rate structure is applied to the various rates on iron ores in the United States, it is used in the loosest possible sense.

A radical change in the freight rate structure on iron ores is not the goal of this proceeding. However, analysis of the revenue, cost, and other material provided in part I has made it possible to establish certain parameters for a freight rate structure that would leave unaffected the vast majority of individual rates while changing the limited number of rates found to be outside the bounds established. It is clear that any attempt to rationalize an existing freight rate structure must, to some extent, be arbitrary. Further, it is recognized that the data upon which these recommendations are made represent the facts as being in 1973 and not at the current time. Thus, our recommendations will be general in nature and will attempt to provide the formula or benchmark against which individual freight rates on iron ores may be measured in the future.

As it is not our intention to prescribe column-commodity rates or individual point-to-point commodity rates that will become quickly outmoded, the standards discussed will relate the rate structure to the single most important variable factor, cost of service. It seems beyond cavil that the movement of iron ores should be profitable for the involved railroads. None of the parties to this proceeding has proposed or suggested otherwise. However, analysis of the revenue/variable cost data developed in part I of this report indicates that some movements of iron may currently be unprofitable; that is, revenue is less than 100 percent of variable cost.

Of the 254 representative movements considered in this proceeding, 80, or 31 percent of all movements, showed ratios of revenue to variable cost of less than 100 percent. This figure would be cause for concern if it actually meant that the railroads were losing money on 31 percent of all representative movements. Closer analysis indicates that 64 of the 80 below-variable-cost movements were under single-car rates and only 16 were under multiple-car and unit-train rates. Since it does not appear likely that much traffic is actually moving in single-car lots, we must assume that most, if not all, of the traffic moving under the single-car rates is moving in multiple-car or unit-train lots. Since the published tariffs allow movements of single-car lots we were obliged to determine costs under the theory that single cars would be moved. It appears probable that these 64 movements were transported in multiple-car or unit-train service. If this is so, the single-car costs would not apply. We, therefore, request that the carriers review these movements to determine whether multiple-car or unit-train rates should be published to reflect actual conditions of movement. These changes would allow future analyses of iron ore freight rates to be far more accurate. As 57 of the 64 single-car rates considered are found in western territory, our recommendation as to review should be especially noted by carriers in that territory.

Assuming that the changes we have recommended would bring the involved rates above the variable cost level, only 16 multiple-car and unit-train rates of the 254 representative movements, or 6.3 percent, actually return revenue less than variable cost. Of these 16 multiple-car and unit-train rates, 5 are in southern territory and 11 are in western territory. Information received from the parties indicates that only one of the five below variable cost rates in southern territory, the rate from Burnside, La., to Harvey, La., currently moves any traffic. As our calculations indicate that this rate returns 99 percent of variable cost, only a minor upward revision would be necessary to make this rate compensatory.

The 11 multiple-car and unit-train rates from production points in western territory found noncompensatory involve only three destinations: Granite City, Ill., East Chicago, Ind., and Escanaba, Mich. Seven of these shipments were to the transshipment point of Escanaba. Two additional facts should be noted in regard to the rates to Escanaba. First, there appears to be some double counting involved. When two parties presented evidence concerning the same rate with slightly different raw data such as average loading per car, our calculations as to cost and revenue per ton were made and presented for both sets of data. Second, although the ULS have been forceful in their presentations concerning the inherent cost advantages involved in the movement of iron ores shipped in the Lake Superior region, our methodology in computing costs remained consistent for all unit-train movements in that region. No explanation was offered by the ULS concerning reasons for the movements to Escanaba returning significantly smaller ratios of variable costs than are returned by similar movements to other destinations in the same region.

We, therefore, recommend that the involved carriers in the southern and western territories review the currently applicable rates and costs applicable to the multiple-car and unit-train movements shown in part I as returning less than 100 percent of variable costs. If current data indicate that these movements continue to be noncompensatory, necessary upward revisions should be made.

A review of the revenue/cost analysis made in Ex Parte No. 270 (Sub-No. 4), *Investigation of Railroad Frt. Rate Structure—Coal,* 345 I.C.C. 71, 225-280 (1974), reveals that only nine of the considered representative or repetitive movements of coal returned revenues in excess of 230 percent of variable cost. Similarly, in the instant case involving another bulk commodity normally moved in multiple-car or unit-train shipments, only 16 of the 254 considered movements, or 6.3 percent, returned revenue in excess of 230 percent of variable cost. The following table sets forth the occurrence of movements returning revenue above 230 percent of variable cost by territory and type of rate.

TABLE 196

Location of high ratio movements of iron ores, 1973

	Single car	Multiple car	Unit train	Total
Official	—	—	13	13
Southern	—	—	—	—
Western	3	—	—	3
Total	3	—	13	16

The three single-car movements in western territory noted above all occur in the highest weight group, 190,001-220,000 pounds, and all occur in long-distance movements in excess of 400 miles. The 13 unit-train movements in official territory all occur for mileages between 51 and 151, and 12 of the 13 occur in the 130,001-160,000 pound weight group.

It is our finding, based on the evidence presented by the parties and our own calculations of the costs involved, that ratios of revenue to variable cost in excess of 230 percent represent an anomaly when viewed against the norm for the transportation of iron ores. We, therefore, recommend that the parties involved with the 16 movements shown in part I to return revenues in excess of this percentage review the current rates and costs for these movements. Necessary revisions downward should be made in instances where the ratio continues to be in excess of 230 percent. In future complaint cases, a showing that movements of iron ores return revenues in excess of 230 percent of variable cost may give rise to the rebuttable presumption that the involved rates are unjustly and unreasonably high.

We reiterate our belief that the evidence presented has not shown a necessity for a major overhaul of the freight rate structure on iron ores. However, it has shown a need for the recommended review of many rates currently applicable to single-car movements and has also suggested the need for changes in a limited number of rates that appear to be noncompensatory or that appear to return revenue in excess of 230 percent of variable cost. It should be particularly noted that we should not be interpreted as saying that all rates returning revenues equal to or less than 230 percent of variable cost will automatically be found to be just, reasonable, and otherwise lawful. Individual cases will be decided, as always, on the basis of the facts presented therein.

The Special Projects Counsel has indicated two additional areas of disparities and distortions within the freight rate structure. The first concerns the distortions that may be caused by the three methods of application of ex parte increases. As noted in earlier sections, general increases have been sought, allowed, and applied on a cents-per-ton basis, a percentage basis with a flat cents-per-ton holddown, and on a flat percentage basis. As freight rates on iron ores normally increase as mileage increases, application of general rate increases on a cents-per-ton basis or on a percentage basis with a cents-per-ton holddown has tended to place greater burdens on movements of shorter distances, while increases on a straight percentage basis more equally distribute burden when terminal expenses and line-haul expenses increase by similar percentages. We must reject the notion that burden should be judged on the basis of the cents-per-ton increase. While this measurement is clearly significant to competing steel producers, it has no relevance to the issues considered in general increase cases. These cases primarily are concerned with revenue needs of carriers occasioned by increased costs, and general increases should apportion increased rates equitably among all shippers. Unless these costs tend to rise more rapidly in the area of terminal expenses than they do for line-haul expenses, this apportionment can best be made by granting general increases on a flat percentage basis and we recommend that this method be utilized in future applications of general increases to iron ore movements when a showing is made that terminal expenses and line-haul expenses have risen proportionately.

The second topic raised by the Special Projects Counsel, and the last to be considered in this section, refers to the freight rate structure on ex-lake movements of iron ores. As noted in part I, three different sets of rates apply for these movements: 1) rates on movements of iron ores having a prior regulated rail haul, 2) rates on movements of iron ores not having had a prior regulated rail haul, and 3) rates on movements of imported ores. Rate histories for these three sets of rates are found in part 1(D)(2).

Until Ex Parte No. 256, rates for each type of movement from ex-lake ports were equal. Our decision in that case caused movements of ex-lake ore with a prior regulated rail haul to be 5 cents per ton less expensive to each of the destination groups than shipments of the other two types of ore to the same destination points. Subsequent increases in Ex Partes Nos. 259, 262, and 265 magnified the differences between rates on ore with a prior rail haul and the still-equal rates on domestic ore without a prior regulated rail haul and imported ore. The picture was altered considerably by our decision in Ex Parte No. 267 which served to equalize (except for differences due to rounding) the rates on iron ore with a prior regulated rail haul and the rates on ores. These rounding differences in 1970 were normally no more than 1 cent per ton and roughly the same differences appear in a comparison of the two sets of rates at the X-305A level.

The ex-lake movements of iron ore that have not had a prior regulated rail haul continued to be disadvantaged after Ex Parte No. 267 and the differential in rates which was 5 cents in 1967 now ranges between 7 and 10 cents per ton.

The rationale of the Ex Parte No. 256 decision as it applied to movements of ex-lake iron ores (see 332 I.C.C. 315-319) appears to have been that movements of ex-lake iron ores without a prior regulated rail haul should be limited to a 5-cent-per-ton increase because this 5-cent increase combined with a similar 5-cent increase on movements from the producing mines to the upper lake ports would equal the 10-cents-per-ton increase allowed on the movements of ex-lake ores not having had a prior regulated movement and the 10-cents-per-ton increase allowed on ex-lake movements of imported ores. Thus, the total charges for movements of ores by regulated carrier from the mines to the upper lake ports and the lower lake ports to the steel mills would not bear a greater share of the total revenue increase to the railroads than would movements of ores having only one regulated haul.

While this rationale makes sense on one level, it subsumes the fact that all movements of ex-lake iron ores have had a prior rail haul. Iron ore does not spring up by magic at upper lake ports. It moves there from the producing mines by regulated and unregulated rail carriers. The unregulated carriers appear to have experienced similar increases in costs that are experienced by regulated rail carriers. Thus it appears that our action in Ex Parte No. 256, rather than equalizing costs of movements of ex-lake iron ores with prior regulated hauls and their competitors, both foreign and domestic, actually served to place the ores with a prior regulated rail haul at a competitive advantage. Assuming the justification for this action was valid at the time, the validity was lessened by our decision in Ex Parte No. 267 which served to equalize the rates for movements of imported ores with the rates for movements of domestic ores with a prior regulated haul. After this action the only parties being disadvantaged by higher ex-lake rates on iron ores were domestic producers who chose to utilize private carriage as opposed to common carriage for the movement from the mine to the upper lake ports.

As there is no apparent rationale for discriminating against this class of domestic producers and preferring other foreign and domestic producers, and as there are no discernible benefits derived by the maintenance of three levels of rates as opposed to one, we strongly recommend that an investigation be instituted to determine if equivalent rates should be published for the movement of all types of ex-lake iron ores.

Part IV: Uneven effects of increases on individual railroads.

The Coordinator's call for evidence in this proceeding also provided the parties the opportunity to present evidence designed to show the uneven revenue effects (if any) of general rate increases on freight rates on iron ores on individual railroads, why these results may have occurred and what corrective action could be taken to remedy these effects.

While evidence has been presented in regard to revenues earned by individual railroads, none of the parties has noted uneven effects caused by general revenue increases. However, certain generalizations in regard to the ex parte increases and the movement of iron ores have been mentioned by the parties in regard to this topic.

First, the very nature of general freight rate increases has normally involved the same increase being approved for each railroad nationwide. While minor differences in increases actually applied have been noted, none of these differences has had the effect of altering the competitive situations of the involved railroads. Changes in tonnages moved from one year to the next have generally been ascribed to demand for iron ores or to factors not related to increases approved on the basis of revenue needs.

Second, it is clear that the general increases approved on movements of iron ores have been more significant to some railroads than to others. Primarily, because of geography, certain railroads move more iron ores and are more dependent on iron ore traffic than are other lines. Further, it is clear from the cost evidence noted in part I of this report that certain movements of iron ores are more profitable than others. General freight rate increases have not altered these situations.

Finally, some of the parties have noted that the consideration of uneven effects is in issue in Ex Parte No. 270 (Sub-No. 3), Investigation of Railroad Freight Rate Structure—Uneven Effects of General Increases on Individual Railroads. However, consideration of uneven effects in this proceeding is appropriate and, based on this record, no uneven effects have been demonstrated to have resulted from the approval and application of general freight rate increases.

Part V. Railroad service.

In part V, appendix A, of the order of December 28, 1973, the Coordinator asked the parties to submit any evidence bearing on the issue of whether general increases have provided sufficient revenues to induce the railroads to undertake improvements in service to meet the requirements of shippers of iron ores; and whether the railroads, in requesting general increases in freight rates, have taken into account possible variations in services being provided shippers of iron ore.

At the time the Coordinator issued the December 28, 1973, order, the Commission already had instituted a proceeding Ex Parte No. 270 (Sub-No. 2), Investigation of Railroad Freight Service, now pending. It was not intended that part V of this investigation into the freight rate structure on iron ores be duplicative of the more comprehensive service investigation in Ex Parte No. 270 (Sub-No. 2). It was the Coordinator's purpose to give shippers of iron ores and other interested parties an opportunity in this proceeding to express their view in connection with freight service on iron ores within the framework of the issues presented.

Iron ore generally moves in general service open-top hopper cars and has certain transportation characteristics that makes the traffic a highly profitable commodity notwithstanding low revenues per ton-mile. This profitability is due to the reduced handling costs which result from mechanized loading and unloading, unit trains and/or trainload movements and the low susceptibility to loss and damage.

Table 197 presents the aggregate number of open-top hopper cars for the period 1966-1973. The number of this type of car has steadily declined during the period. With the increased demand for iron ores this decrease in total number has manifested itself in the average shortage of cars as shown on table 198.

Carriers must look to their freight earnings for the funds to maintain an inventory of suitable cars for moving iron ores in addition to maintaining plant and facilities properly. The railroad respondents stress the fact that the present rate of return in view of the cost of capital, spiraling operating expenses and other factors bearing on the financial posture of the individual railroads is inadequate and should reach at least 10 percent.

Table 199 shows the change in relationship of revenues to expenses for the same period of the ex parte increases discussed in this section. With the exception of the southern district which includes the profitable Southern System and shows a + 0.92 percent factor, the other totals denote a decline of 5.90 percent, 6.21 percent, and 3.49 percent for the total United States eastern, and western districts, respectively.

Generally speaking, the steel companies consider railroad service on ex-lake ore satisfactory. The principal problem is the adequacy of car supply during the open season of navigation on the lakes. This is not a new problem, however, since hopper car shortages during the period of peak demand have become a way of life. The fact that all railroads, including those in reorganization proceedings serving the lower lake ports, have been providing a reasonably adequate service on iron ore should be persuasive that the general increases in the ore rates have provided sufficient revenues for the several carriers to enable them to provide such service.

TABLE 197

Aggregate capacity of open top hoppers cars owned by class I railroads

As of January 1	Ownership	Aggregate capacity (net tons)	Average tons per car	Change from previous year	
				Cars	Percent of capacity
1966	428,566	27,932,722	65.18	-5,668	-1.3
1967	428,970	28,684,905	66.87	+404	+0.1
1968	419,298	28,680,366	68.40	-9,672	-2.3
1969	410,508	28,756,183	70.05	-8,790	-2.1
1970	394,204	28,207,421	71.56	-16,304	-4.0
1971	388,492	28,318,724	72.89	-5,712	-1.4
1972	386,482	28,758,513	74.41	-2,010	-0.5
1973	373,136	28,350,873	75.98	-13,346	-1.4
1974	354,608	27,152,335	76,57	-18,528	-4.2

Source— Ex Parte No. 241, *Investigation of Adequacy of Railroad Freight Car Ownership, Car Utilization, Distribution, Rules and Practices* (decided June 10, 1974).

TABLE 198

Average daily freight car shortages (hoppers) class I U.S. railroads

Period ending	*Shortage No. of cars*
January 1, 1966	71
January 7, 1967	34
January 6, 1968	62
January 4, 1969	11
January 3, 1970	305
January 2, 1971	286
January 1, 1972	21
March 25, 1972	284
June 24, 1972	418
September 23, 1972	217
December 23, 1972	148
January 20, 1973	674
February 24, 1973	1,452
March 24, 1973	1,886
April 21, 1973	2,603
May 26, 1973	3,189
June 23, 1973	3,677
July 21, 1973	2,140
August 18, 1973	2,244
September 22, 1973	2,293
December 1, 1973	1,466
February 2, 1974	2,096
February 16, 1974	2,932

Source: Ex Parte No. 241, *Investigation of Adequacy of Railroad Freight Car Ownership, Car Utilization, Distribution, Rules and Practices* (decided June 10, 1974).

TABLE 199

Operating expenses and revenues of class I railroads, by districts
(Thousands of dollars)

Year	Eastern	Southern	Western	Total U.S.
Expenses				
1966	$3,244,504	$1,205,708	$3,671,624	$8,121,835
1967	3,282,060	1,243,897	3,685,432	8,211,390
1968	3,416,203	1,310,917	3,853,840	8,508,961
1969	3,545,001	1,424,654	4,096,873	9,066,529
1970	3,853,523	1,516,765	4,289,694	9,659,982
1971	3,874,504	1,619,785	4,561,057	10,055,347
1972	3,902,806	1,718,180	4,928,948	10,549,933
1973	4,191,816	1,899,401	5,498,807	11,917,555
Revenues				
1966	4,216,998	1,612,804	4,830,835	10,660,637
1967	4,090,532	1,627,497	4,658,883	10,376,911
1968	4,242,730	1,716,265	4,895,684	10,854,678
1969	4,366,467	1,880,771	5,203,087	11,450,325
1970	4,541,396	2,002,676	5,447,585	11,991,658
1971	4,650,272	2,157,256	5,881,483	12,689,016
1972	4,783,014	2,302,903	6,325,199	13,411,116
1973	5,186,441	2,555,507	7,071,193	15,015,234
Percent of change revenues to expenses 1966-1973.	-6.21	+.92	-3.49	-5.90

Source: ICC Statement Q-100.

Capital expenditures by class I railroads
(Thousands of dollars)

Year	Equipment	Roadway and structures	Total
1966	$1,564,424	$398,604	$1,963,028
1967	1,148,381	374,097	1,522,478
1968	818,720	368,259	1,186,979
1969	1,088,712	420,681	1,509,394
1970	993,095	358,344	1,351,439
1971	863,623	367,958	1,177,627
1972	847,623	367,958	1,215,581
1973	976,766	458,594	1,435,360

Note: Figures may not add due to rounding.
Source: ICC Statement Q-125.

The steel companies contend that the railroads have not, in proposing the same percentage increases on iron ores as on traffic generally, "taken into account possible variations in services being provided the shipper." They show that there is no doubt that the railroads provide substantially less service on iron ore traffic from the lakes than on traffic generally. Most other traffic moves in single-car shipments or small blocks of cars and requires frequent classifications, switching, and individual car documentation. It frequently moves in one-way train service. Trainload weight generally is less than the weight of iron ore trains. There is rarely a volume movement in the opposite direction to make empties available and reduce empty mileage as is true where coal moves to the lakes and moves ores in the opposite direction. Iron ore, as the Commission recognized in *Increased Rates on Iron Ore*, 313 I.C.C. 549 at 555, is moved in trainloads with little or no switching or other complex services.

The lesser services necessary to handle the volume ore movements, of course, translate into railroad operating economies of substantial proportions. The steel companies maintain that it has never been fully appreciated that heavy trainload movements involving the simplest of road haul operations from port to mill are the backbone of railroad service. And, of course, ore generates additional outbound iron and steel traffic for the railroads. Railroads are basically volume carriers and iron ore makes a valuable contribution to their revenues while demanding only minimal and uncomplicated service. It has been maintained that the lesser service necessary on this traffic should properly be taken into consideration when any across-the-board general increase is proposed.

The Lake Superior District iron ore movements are considered by the ULS to be unique. There is a wide diversity of service functions performed by the railroads with specialized equipment and facilities. The ULS agree that the service provided by the carriers is satisfactory and that movements of iron ores in that district are relatively free of material problems or delays caused by poor service. The experience of the shippers has been that the upper lake carriers have historically sought their business and the improvements and equipment offered by these railroads have been adequate. The BN is proposing to spend several million dollars to expand its dock facilities to handle a new larger class of ore boats.

The shippers stress the point that, contrary to the 1969 Burden Study, iron ore in the Lake Superior District is more than paying its fair share of railroad revenues. General rate increases which do not recognize the Lake Superior District by special exemption or provision will substantially increase the profits of the DM&IR because of the high amounts of ore carried by the line. However, the effect on other railroads such as the BN and C&NW would be significantly less. Iron ore movements in 1972 accounted for only 1.7 percent of the BN's gross freight revenues of $987 million, and for the C&NW iron ore revenues were only a slightly larger 2.9 percent of gross freight revenues. A 10-percent increase in iron ore rates in 1972 by the DM&IR would have increased its net railway operating income before Federal income tax by 30 percent, but the same increase realized by the BN would have raised its net railway operating income before Federal income tax by only 4 percent.

There have been no major problems for western carriers in providing good service to shippers of iron ore—whether the movements have been single car, multiple car, or trainload. The carriers have had no difficulty in providing equipment for these movements. Ex parte increases, and escalated increases in lieu thereof, are considered essential by these carriers in order to support good service. Improvements in services have occurred largely through the establishment of multiple-car and trainload rates involving certain inherent operating efficiencies. Iron ore carriers have continued to invest in equipment and facilities for the benefit of efficient handling of iron ore shipments. In turn it has been necessary during periods of rapid inflation of costs to rely upon freight rate increases to enable the railroads to continue to provide good service.

Our review of the cost and revenue information presented in part I of this report indicates that the contribution to earnings provided by the movements of iron ores has been sufficient to maintain the currently acceptable level of railroad service for this commodity. General freight rate increases appear to offset increasing expenses and also appear to maintain the contribution levels. While the railroads are undoubtedly correct in their assertion that total revenues from the movement of all commodities are currently insufficient to provide the funds necessary for adequate plant and car maintenance and investment, this shortfall is not caused by insufficient revenues from the movement of iron ores. It seems clear that, if the ratio of revenue to variable cost for all other commodities equaled the ratio for the movement of iron ores, many of the financial difficulties faced by the railroads would be eliminated. We, therefore, find that general increases as applied to the rate structure on iron ores have provided sufficient revenue to induce the railroads to undertake improvements in service to meet shippers' requirements. We further find that increases as approved and as applied have properly taken into account the type and extent of service being provided to the shippers of iron ores.

Part VI: Matters not otherwise listed.

In the event that the parties desired to raise issues germane to this proceeding that would not naturally fall within the ambit of parts I through V, the Coordinator offered the opportunity to present evidence under part VI, matters not otherwise listed. Such evidence was to specifically indicate the purpose for which it was being introduced and the reason it does not come within one of the five foregoing catagories. Additionally, the principal focus of the investigation as set forth in the report of the Coordinator, in *Investigation of Railroad Freight Rate Structure*, 345 I.C.C. 1, was to be kept in mind.

While some parties were notably lax in their interpretations of the Coordinator's instructions, two issues have been raised that should be briefly mentioned. As previously noted, two of the railroads in southern territory are concerned with the delays experienced in the approval of intrastate rate increases. Tables 200 and 201 present the interstate and intrastate ex parte increases on iron ores from Ex Parte No. 256 through Ex Parte No. 295-A and the time lag, in days, between the effective dates of interstate and intrastate increases. These delays are considered significant for two reasons: first, they cause revenue losses that are significant; and, second, they create a time period in which intrastate shippers have a competitive advantage over interstate shippers.

While the delays noted in table 201 are significant in many instances, the causes of such delays are not readily apparent. We have not been informed of the dates the intrastate increases were proposed and we have not been informed as to any steps the railroads may have taken to request expedited action on their requests for intrastate increases. In addition, the parties have not mentioned what actions they may have taken under section 13 of the Interstate Commerce Act to bring the delays to our attention.

TABLE 200

Statement showing southern territory interstate and intrastate ex parte increases on iron ores--X-256 thru X-265-A

Interstate and State	X-256		X-259-A (interim)		X-259-B		X-262		X-265-A (interim)		X-265-B	
	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase
Interstate----------	Aug. 19, 1967 (interim)	10¢-NT or GT	June 24, 1968	3%-max. 20¢-NT or GT (Item 1080)	Nov. 28, 1968	5%-max. 20¢-NT or GT (Item 1080)	Nov. 18, 1969	6% (Item 5)	June 9, 1970	5%-max. 24¢-NT or GT (Item 45)	Nov. 20, 1970	6%
	Mar. 18, 1968 (Final)	10¢-NT or GT (Group 309)									Apr. 12, 1971 (Final)	(Item 1)
		NT or GT Cents						Percent				Percent
Alabama----------------	Sept. 25, 1967 (Interim)	10	---------	--------	June 18, 1969	5%-max. 20¢-NT or GT	Aug. 25, 1970	6	---------	---------	June 23, 1971	5
	Mar. 18, 1968 (Final)	10										
Florida----------------	Mar. 18, 1968	10	---------	--------	Apr. 4, 1970	5%-max. 20¢-NT or GT	Oct. 27, 1970	5	---------	---------	Dec. 4, 1971	6
Georgia----------------	Oct. 10, 1967 (Interim)	10	Dec. 15, 1968	3%-max. 20¢-NT or GT	Sept. 10, 1969	5%-max. 20¢-NT or GT	Sept. 1, 1970	6	---------	---------	Nov. 22, 1971	6
	Mar. 18, 1968 (Final)	10										
Kentucky---------------	Dec. 18, 1967 (Interim)	10	Aug. 1, 1968	3%-max. 20¢-NT or GT	Jan. 11, 1969	5%-max. 20¢-NT or GT	July 29, 1970	5	---------	---------	Dec. 19, 1970	6
	Mar. 18, 1968 (Final)	10										
Louisiana--------------	May 13, 1968	10	---------	--------	May 5, 1969	5%-max. 20¢-NT or GT	Nov. 12, 1970	6	---------	---------	Dec. 21, 1970	6
Mississippi------------	Oct. 12, 1967 (Interim)	10	---------	--------	Aug. 25, 1972	5%-max. 20¢-NT or GT	Oct. 10, 1973	6	---------	---------	Oct. 10, 1973	6
	Mar. 18, 1968 (Final)	10										

Statement showing southern territory interstate and intrastate ex parte increases on iron ore--X-256 thru X-286-A--Continued

Interstate and State	X-256		X-259-A (Interim)		X-259-B		X-262		X-265-A (Interim)		X-265-B	
	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase
Interstate----------	Aug. 19, 1967 (Interim)	10¢-NT or GT	June 24, 1968	3%-Max. 20¢-NT or GT (Item 1060)	Nov. 28, 1968	5%-max. 20¢-NT or GT (Item 1060)	Nov. 18, 1969	6% (Item 5)	June 9, 1970	5%-max 24¢-NT or GT (Item 45)	Nov. 20, 1970	6% (Item 1)
	Mar. 18, 1968 (Final)	10¢-NT or GT (Group 309)										
		NT or GT Cents						*Percent*				*Percent*
North Carolina-------	Sept. 25, 1967 (Interim)	10	Feb. 26, 1969	3%-max. 20¢-NT or GT	Sept. 8, 1969	5%-max. 20¢-NT or GT	Jan. 21, 1972	6	---------	---------	May 25, 1973	6
	Mar. 18, 1968 (Final)	10										
South Carolina-------	Oct. 2, 1967 (Interim)	10	Jan. 1, 1969	3%-max. 20¢-NT or GT	Jan. 1, 1970	5%-max. 20¢-NT or GT	Oct. 1, 1970	6	---------	---------	Dec. 20, 1971	6
	Mar. 18, 1968 (Final)	10										
Tennessee------------	Oct. 30, 1967 (Interim)	10	-------	---------	May 19, 1969	5%-max. 20¢-NT or GT	Aug. 23, 1970	6	---------	---------	June 3, 1971	6
	Mar. 18, 1968 (Final)	10										
Virginia-------------	Dec. 7, 1967 (Interim)	10	Oct. 28, 1968	3%-max. 20¢-NT or GT	July 28, 1969	5%-max. 20¢-NT or GT	Oct. 5, 1970	6	---------	---------	Apr. 30, 1971	6
	Mar. 18, 1968 (Final)	10										

Statement showing southern territory interstate and intrastate ex parte increases on iron ores--X-256 thru X-295-A--Continued
B

Interstate and State	X-267-A (interim)		X-267-B		X-281 (interim)		X-281-B (a)		X-295-A (b) (interim)		X-295-A (final)	
	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase	Effective date	Increase
Interstate-----------	Nov. 20, 1970	6% (Item 5)	Apr. 12, 1971	6% (Item 100) (Item 150)	Feb. 5, 1972	2 1/2% (Surcharge) (Item 10)	Oct. 23, 1972	4% (Item 620)	Aug. 19, 1973	3% (Item 620)	Dec. 27, 1973	3% (Item 520)
				Percent				*Percent*		*Percent*		*Percent*
Alabama--------------	---------	---------	Mar. 27, 1972	6	---------	----------	July 15, 1973	4	Oct. 20, 1973	3	Dec. 27, 1973	3
Florida--------------	---------	---------	June 18, 1972	6	---------	----------	Jan. 6, 1973	4	----------	----------	Mar. 23, 1974	3
Georgia--------------	---------	---------	Sept. 1, 1972	6	Oct. 15, 1972	2 1/2% (Surcharge)	Apr. 2, 1973	4	----------	----------	Jan. 1, 1974	3
Kentucky-------------	---------	---------	Aug. 1, 1971	6	Oct. 13, 1972	2 1/2% (Surcharge)	Mar. 6, 1973	4	----------	----------	Mar. 1, 1974	3
Louisiana------------	---------	---------	May 1, 1972	6	---------	----------	Aug. 13, 1973	4	----------	----------	Apr. 5, 1974	3
Mississippi----------	---------	---------	Oct. 10, 1973	6	---------	----------	Aprl. 1, 1973	4	----------	----------	Jan. 1, 1974	3
North Carolina-------	---------	---------	May 25, 1973	6	---------	----------	Mar. 9, 1974	4	----------	----------	Apr. 5, 1974	3
South Carolina-------	---------	---------	May 1, 1972	6	---------	----------	June 1, 1973	4	----------	----------	Mar. 18, 1974	3
Tennessee------------	---------	---------	Nov. 9, 1972	6	---------	----------	June 1, 1974	4	----------	----------		
Virginia-------------	---------	---------	Dec. 11, 1971	6	---------	----------	Feb. 22, 1973	4	----------	----------	Jan 28, 1974	3

(a)--Tariff X-281-A never became effective.
(b)--Tariff X-295 never became effective.
Source--Ex Parte increase tariffs

TABLE 201

Statement showing the time lag, in days, between the effectiveness of ex parte increases on interstate and intrastate traffic in Southern States

Interstate or intrastate	X-256	X-259-A	X-259-B	X-262	X-265-A	X-265-B	X-267-A	X-267-B	X-281	X-281-B	X-295-A	Total
Interstate effective------	Aug. 19, 1967	June 24, 1968	Nov. 28, 1968	Nov. 18, 1969	June 9, 1970	Nov. 20, 1970	Nov. 20, 1970	Apr. 12, 1971	Feb. 5, 1972	Oct. 23, 1972	Aug. 19, 1973	
Intrastate:												
Alabama------------------	37	--------	202	280	-------	215	--------	340	-------	265	62	1,401
Florida------------------	212	--------	492	343	-------	379	--------	423	-------	75	216	2,140
Georgia------------------	52	174	286	287	-------	367	--------	497	253	161	135	2,212
Kentucky-----------------	121	38	44	253	-------	50	--------	466	251	136	194	1,653
Mississippi--------------	54	--------	1,366	1,179	-------	1,055	--------	902	-------	160	135	4,851
North Carolina-----------	37	247	284	794	-------	917	--------	764	-------	137	229	2,403
South Carolina-----------	44	191	399	317	-------	395	--------	374	-------	221	211	2,152
Tennessee----------------	72	--------	172	278	-------	195	--------	566	-------	--------	[1]285	2,563
Virginia-----------------	110	126	242	321	-------	161	--------	244	-------	122	162	1,423

[1] Increase has not been authorized in Tennessee. Days have been computed through May 31, 1974.

Source: Ex parte increase tariffs.

Section 13(4) provides authority for the Commission to institute an investigation into intrastate rates whether or not theretofore considered by any State agency or authority and without regard to the pendency before any State agency or authority of any proceeding relating thereto. That section further requires the Commission to give special expedition to the hearing and decision in such cases.

We considered the issue of delays in the granting of intrastate increases in *Kansas Intrastate Freight Rates and Charges—1971*, 343 I.C.C. 400 (1973). As we stated at page 408 of that report,

> *** In Ex Parte No. 265 and Ex Parte No. 267, *Increased Freight Rates 1970 and 1971* [339 I.C.C. 125, 176], the Commission commented upon the adverse effect of delayed intrastate rate increases in the following manner: "Approximately 14 percent of the respondents' gross revenues is derived from intrastate traffic. *** In nearly all cases, the increases on intrastate traffic do not take place for a period of several months after the interstate increases. Not infrequently, prolonged proceedings under section 13 of the Interstate Commerce Act are required to establish the intrastate increases. All of these delays and limitations have a significant impact on railroad revenues and working capital, particularly since increases are normally sought to meet cost increases already incurred."
>
> It appears that carriers, while claiming an urgent need for additional revenue in general rate increase proceedings before this Commission, are at times unduly lax in seeking intrastate rate increases. Carriers, as indicated by this proceeding, have not diligently pursued the need to raise intrastate rates when such rates are so low as to cast an undue burden on interstate commerce. ***

Because of the limited evidence presented in this issue, we are unable to make any finding in this proceeding as to whether the carriers have been diligent in their attempts to secure intrastate increases from the appropriate State regulatory agencies. As it seems clear that section 13(4) is an appropriate vehicle for the carriers to bring the need for individual intrastate increases to our attention, we will make no recommendation in this area.

The second issue raised for our consideration in this section involves the current levels of handling charges at the ex-lake railroad docks. Depending on the logistics of a particular movement, charges are applied separately for lifting the ores from the hold of the vessel to the rail of the vessel and from the rail of the vessel to the railroad car or from the hold of the vessel to the rail of the vessel, from the rail of the vessel to the dock stockpile, and from the dock stockpile to the railroad car. Table 202 presents the schedule of these charges at the lower lake ports, the increases applied on these charges, and the cost for performing the same service as experienced by Republic Steel at its privately owned ore dock.

Republic maintains that it uses the same equipment and systems used by the railroads and that its costs, as presented, should be considered representative of the costs experienced at the railroad-owned docks. It further maintains that the difference between its costs and the railroad charges for the service establishes that the railroad charges are excessively high. We will not consider the merits of this assertion for two reasons: first, we consider the issue of dock handling charges to be beyond the scope of this proceeding and second, and more important, we feel that the complaint procedures available under the act are more than sufficient to cope with the type of question raised by Republic Steel. If any parties are of the opinion that dock handling charges are currently excessive, a complaint proceeding, wherein the issues may be fully developed, is the proper vehicle to be utilized.

TABLE 202

Charges for handling iron ore at lower lake ports in cents per ton of 2,240 pounds

(1)	Charges in effect on May 23, 1917 (2)	Charges in effect on Aug. 19, 1967 (Ex Parte 256) (3)	Charges in effect on Sept. 1, 1973 (Ex Parte 295) (4)	Present charges in effect (Ex Parte 303) (5)	Proposed charges (Ex Parte 305) (6)	Aug. 19, 1967 charges over May 23, 1917 *charges* col. 3 over col. 2 (7)	Sept. 1, 1973 charges over May 23, 1917 *charges* col. 4 over col. 2 (8)	Present charges over May 23, 1917 *charges* col. 5 over col. 2 (9)	Proposed charges over May 23, 1917 *charges* col. 6 over col. 2 (10)	Sept. 1, 1973 charges over Aug. 19, 1967 *charges* col. 4 over col. 3 (11)	Present charges over Aug. 19, 1967 *charges* col. 5 over col. 3 (12)	Proposed charges over Aug. 19, 1967 *charges* col. 6 over col. 3 (13)	Republic's private dock costs for handling iron ore (14)
						Percent increase							
			Direct ore										
Hold of vessel to rail of vessel.	10	28	33	35	40								
Rail of vessel to car	6	25	38	41	46								
Total	16	53	71	[3]76	86	231	344	375	438	34	43	62	[1]45
			Dock ore										
Hold of vessel to rail of vessel.	10	28	33	35	40								
Rail of vessel to dock stockpile.	16	53	78	83	94								
Dock stockpile to car	10	34	50	53	61								
Total	36	115	161	[3]171	195	219	347	375	442	40	49	70	[2]53

Explanation of reference marks

[1] Republic's costs are computed for the entire operation, hold of vessel to car.

[2] Republic has a similar operation as follows:

Hulett costs hold of vessel to pit on dock	29¢
Ore bridge cost dock pit to stockpile	7¢
Ore bridge cost stockpile to rail car	22¢
Total	58¢

[3] Subject to surcharge of 3%—Tariff of Surcharges Account Increase in Fuel Costs No. X-301-C Traffic Executive Association—Eastern Railroads Agent ICC C-1025.

Tariff authorities for iron ore handling charges

The Baltimore and Ohio Railroad Company Tariff 160-F, ICC 25034.
The Baltimore and Ohio Railroad Company Tariff 161-G, ICC 25037.
Bessemer and Lake Erie Railroad Company Tariff 380-F, ICC 1632.
Erie Lackawanna Railway Company Tariff 5018-A, ICC 115.
Erie Lackawanna Railway Company Tariff 5028-B, ICC 128.
Norfolk and Western Railway Company Tariff A183-A, ICC 3698-B.
Penn Central Transportation Company Tariff C-79-A, ICC A-132.
Penn Central Transportation Company Tariff C-80-A, ICC A-133.

Part VII: Ultimate findings and recommendations.

On the basis of the record in this proceeding, the Coordinator finds:

1. That iron ores are carried under conditions which, while not optimum, are probably as favorable as those associated with the transportation service performed for any other individual commodity by U.S. railroads.

2. That the overall freight rate structure on iron ores is compensatory and not unreasonably high, but some individual rates fall above and below the zone of reasonableness.

3. That the railroads should examine current costs and revenues on movements of iron ores shown to be noncompensatory at the September 1, 1973, rate and cost levels to determine the need for increases on the rates for these movements.

4. That the respondents should examine current costs and revenues on movements shown to have a rate/variable cost relationship in excess of 230 percent at the September 1, 1973, rate and cost levels and that in future complaint cases a showing that movements of iron ores return revenues in excess of 230 percent of variable cost may give rise to the rebuttable presumption that the involved rates are unjustly and unreasonably high.

5. That a need exists for a review of individual tariffs on iron ores to determine the need for publication of multiple-car or trainload rates in order to give shippers the benefits of high volume traffic and in order to make analysis of the freight rate structure on iron ores more accurate.

6. That an investigation should be instituted to determine if equal rate structures should be established for all types of ex-lake movements of iron ores.

7. That a need exists to alter the reporting system used to develop the Freight Commodity Statistics in order to allow the determination of a total-traffic-moved category that does not include duplications.

8. That future general rate increases on iron ores should be made on flat percentage bases when terminal and line-haul expenses increase by similar percentages to prevent increasing the relative burden borne by relatively short mileage movements.

9. That the impact of general freight rate increases applied to the transportation of iron ores has had some effects on the capital expenditures made by iron ore mining companies and steelmaking companies but in general have not been self-defeating and have

been necessary in generating additional revenue to pay for increased labor costs and higher prices of materials and supplies.

10. That the application of general increases authorized by the Commission has not caused any substantial distortions in the freight rate structure, but that some distortions in the freight rate structure exist which have evolved apart from general freight increases and which have been amplified by such general increases.

11. That the impact of general freight increases on iron ores has not had an uneven effect in meeting the revenue requirements of individual railroads except to the extent that some railroads carry proportionately more iron ores than do other railroads.

12. That the general freight increases sought by the railroads and authorized by the Commission have for the most part been for the purpose of offsetting higher prices of materials and supplies and increased wage costs; but that railroad service on iron ore movements is currently adequate and that no indications are evident that service will not be adequate in the near future.

13. That a need may exist to alter the freight rate relationships between the ex-lake destination groups on iron ore movements and that this need may be established by fully examining the revenue contributions made by consuming steel mills in the ex-lake destination groups in a formal investigation separate and apart from Ex Parte No. 270 that will compile data on rates, cost of service, and the volume of traffic currently moving to these destination groups.

It is ordered, That this subnumbered proceeding be, and it is hereby, closed.

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